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ESSAYS, MONOGRAPHS, AND CASES.

The Physiology of the Circulation. A Course of Lectures delivered at the College of Physicians and Surgeons, New York, in the Fall Term of 1859. By John C. Dalton, Jr., M.D., Professor of Physiology and Microscopic Anatomy.

LECTURE VII.

(September 30.)

Capillary Circulation—Structure and Arrangement of the Capillaries—Varieties in Different Organs—Movement of Liquids through Narrow Tubes—Variations of Rapidity with Different Liquids—Experiments—Physical Constitution of the Blood—Movement of Blood in the Capillaries—Equalization of Pressure—Amount of Force requisite for Capillary Circulation—Experiments—Velocity of Blood in Vascular System—Rapidity of the Entire Circulation—Experiment—Peculiarities of Circulation in Different Parts—Inosculation of Arteries—In Mesentery—In Hands and Feet—In Head—Arterial Plexuses—Pulsation of Veins—Portal Circulation—Communication of Portal System with Vena Cava.

Gentlemen—We have seen that the blood moves through the vessels of the living body, subject to a certain pressure; and that this pressure varies in character in different parts of the circulatory system. In the veins it is irregular and fluctuating; in the heart it is

intermittent; in the arteries it is wavy and pulsatile. But notwithstanding these differences, the pressure is continuous, to a certain degree, throughout the vascular system, and is incessantly communicated from one set of vessels to another.

We now come to the third great division of the vascular system, viz., the capillaries. Let us see what conditions influence the flow of blood through these vessels.

The capillaries, you are aware, stand as intermediate channels between the arteries and the veins. All the blood, as a general thing, passing from the arterial to the venous system, must go through these vessels. The principal peculiarities of the structure and arrangement of the capillaries are:

1st. That they are very small, (varying in diameter from 1-6000 to 1-2000 of an inch); 2nd, that they are exceedingly numerous; and 3d, that they inosculate with each other so freely and abundantly as to form a plexus or network, called the "capillary plexus." All these peculiarities, of course, influence the movement of the blood in passing through their channels.

But the arrangement of the capillary vessels varies considerably in different organs. In the areolar tissue, for example, the meshes of the plexus are irregular in shape, but about equal to each other in size. They are represented in this drawing, taken from the web of the frog's foot. In the adipose tissue, you observe, the vessels are comparatively scanty, and inosculate, between the adipose vesicles, by only a few branches. In the villi of the intestine, again, they are excessively abundant, and the meshes are close and crowded. In the liver, also, the capillary network in each lobule is so abundant as to leave but very little space between the adjacent vessels. Here is a vascular tuft from the placenta, in which the vessels, you see, are in the form of ramifying twisted loops. In the kidney, again, there are tufts of convoluted capillary vessels in the Malpighian capsules, and, besides, an ordinary network interposed between the uriniferous tubules. Nearly every organ in the body may be distinguished, in this way, by some peculiarity in the arrangement of its capillary vessels.

Now, in order to understand the movement of the blood in the capillary vessels, we must first study the *physical conditions of a liquid passing through narrow tubes.* The importance of these conditions has been fully shown by the experiments of M. Poisseuille and others. For when a liquid is made to flow through tubes of small diameter, its movement is very much influenced by the constitution of the liquid, and the substance of which the tubes are composed. There is always

some adhesion between the liquid and the tube in which it is contained; and the smaller the tube, the greater the extent of contact between it and the liquid, in proportion to the quantity of liquid passing through. In other words, the *physical relation*, existing between the liquid and the surface of the tube which contains it, has a great deal to do with the ease or difficulty of its passage. If the liquid be made to flow through a large tube, this influence may be nearly, or quite, imperceptible; but if the same quantity flow through a small tube, the contact of surface will be so greatly increased as to produce a very important effect.

There is a very simple apparatus which will show the effect of which I am speaking. I have here two upright cylindrical jars, containing distilled water. Near the bottom of each is an opening, provided with a narrow glass tube, bent at right angles, through which the liquid contained in the jar may escape. On removing the stoppers at the upper end of the jars, the water immediately begins to run out through the narrow tubes; and you can judge of the rapidity with which it escapes, by watching the level of the fluid, as it sinks in the cylindrical vessel.

In this case, you see that the water runs out through both tubes with the same rapidity, and that both jars are emptied at the same moment.

I will now fill one of the jars again with water, and pour into the other an equal quantity of dilute alcohol. On allowing both liquids to run out, you see that the water escapes much more rapidly than the alcohol, and that the second jar is still nearly half full when the first is already empty.

This is not because the alcoholic mixture is lighter than the water, and so exerts less pressure on the current in the tube; for pure alcohol runs away less slowly than the mixture of alcohol and water, though of course its density is still less.

I will now replace the mixture of alcohol and water in the second jar, with an equal quantity of ether. You see, the ether runs away more rapidly even than the water, and escapes more than twice as fast as the dilute alcohol.

On the other hand, if I place in one of the jars some defibrinated blood, it flows, you observe, with great difficulty, and runs only in drops, or in a very sluggish and interrupted stream. The adhesion of the blood to the surface of the glass is so great that it can only flow out very slowly from the extremity of the tube.

In trying different liquids, with these jars, I have found that the

same quantities of liquid were discharged through the glass tubes in the following times:

A quantity of	water	was discharged in	5	minutes.
" "	ether	"	$3\frac{3}{4}$	"
" "	saturated solution nitrate of potass	"	$5\frac{1}{4}$	"
" "	" " chloride of sodium	"	$6\frac{1}{3}$	"
" "	alcohol	"	7	"
" "	alcohol and water, (equal parts,)	"	8	"
" "	defibrinated blood	"	15	"

You see then, gentlemen, that, in studying the movement of the circulating fluid, it is of the greatest importance to take into consideration both the physical constitution of the blood itself, and that of the lining membrane of the vessels which contain it. Now, the blood, as you know, is a complex fluid, consisting, in about equal proportions, of blood-globules and plasma. The globules are semi-fluid, flexible, yielding bodies, composed mostly of an organic substance, similar in its nature to albumen. The fluid plasma is also distinguished by containing albuminous matter as its most abundant ingredient. The entire blood, therefore, has a peculiar, soft, lubricating consistency, which allows the globules suspended in it to move with the greatest facility.

On the other hand, the lining membrane of the vessels is excessively smooth and polished, and approximates in consistency to that of the blood itself. The circulating fluid, therefore, passes through the vessels with an easy and rapid flow, and with but slight resistance from mechanical adhesion.

Now, let us see what are the peculiarities of the movement of the blood, as it passes through the vessels of the capillary system.

On examining, by the microscope, any transparent and vascular tissue, such as the web of the frog's foot, we find that the capillary vessels cross and interlace with each other in a thousand different directions, so that the blood is infiltrated, or disseminated, so to speak, through the tissues, and comes in contact with every part of their substance. We find, moreover, that the current of the blood in the capillaries is perfectly uniform and continuous. There is no pulsation in its movement, and no contraction or dilatation of the vessels. The different streams divide and reunite with each other at all points, and the red globules of the blood may be seen to glide rapidly through the narrow channels of the vascular plexus.

There is no mechanical impulse, then, visible in this part of the circulation, which should disturb the motion of the fluids. The blood

seems to pass independently through the capillaries, from the arteries on the one hand, to the veins on the other.

What is the force to which this steady movement of the blood is to be attributed? What causes it to penetrate through the vascular network in this manner, and discharge itself constantly into the venous system?

You remember, gentlemen, that the pulsation of the arteries becomes altered and modified from the heart outward. This pulsation, in the neighborhood of the heart, is brusque and sudden, like the action of the ventricle itself. But, as the blood passes outward, the elasticity of the arterial walls gradually replaces the heart's impulse, and the flow of blood becomes equalized and continuous. The farther the current passes from the heart, therefore, the less it is intermittent and pulsatile, and the more it becomes steady and uniform in character; for the intermittent pressure of the heart's action is incessantly converted into the steady pressure of the arterial walls.

The blood, accordingly, is delivered from the arteries into the capillaries, under this equable and continuous pressure. We are not surprised, then, to find that the flow of the blood through the capillaries is constantly and absolutely uniform. There is no difference felt, at this part of the circulatory system, between the contraction and relaxation of the ventricles of the heart; for the force of the ventricular contraction has been dispersed and dissipated in the arterial system, and is returned again, at the time of relaxation, by the elastic reaction of the vessels.

Now, the pressure thus developed, in the arterial system, is sufficient to force the blood through the capillary plexus, and carry it onward to the veins.

This fact has been fully demonstrated by the experiments of Dr. Sharpey, of London, and various other physiologists. They are performed by injecting the vessels of an animal with the aid of a syringe, so constructed as to measure the amount of pressure employed.

I have here, you observe, a syringe which fits into a nozzle with two orifices. Each orifice of the nozzle is provided with a strong flexible tube, a few inches in length, and one of these tubes is connected with the brass mouth-piece of a cardiometer, while the other is left free. Now, when I fill the syringe with water, and forcibly inject the tubes, closing the open end with my fingers, you see that the mercury rises in the cardiometer. The rise of the mercury is in proportion to the pressure exerted by the syringe, and the resistance at the other end of the tube. But as soon as I let go the end of the tube,

and allow the water to flow out freely, the mercury, you observe, instantly falls again in the cardiometer.

When this instrument is to be employed for testing the force necessary for the capillary circulation, the free end of the flexible tube is attached to an artery by a brass armature, and the vessels of the part are then injected with defibrinated blood, until the injected fluid returns freely by the corresponding vein. The rise of the mercury in the cardiometer will then show the exact pressure required, to make the blood pass through the capillaries, and into the venous system.

It is a necessary precaution, however, before trying the experiment, to inject the vessels of the part freely with defibrinated blood, from a common syringe, immediately after the death of the animal; otherwise, the blood would coagulate in the capillaries, and thus interfere with the success of the experiment. In this way, Dr. Sharpey found, that when the free end of the tube was attached to the mesenteric artery of the dog, a pressure of 90 millimetres of mercury caused the blood to pass through the capillaries of the intestine and of the liver; and that under a pressure of 130 millimetres it flowed in a full stream from the divided extremity of the vena cava.

Poisseuille had already discovered that a pressure of 143 millimetres was sufficient to force the serum of the blood through the capillaries of the kidney.

I have done the same experiment, with defibrinated blood, upon the vessels of the lower extremity, by placing the end of the tube in connection with the femoral artery. Under a pressure of 120 millimetres the blood returned readily from the capillaries of the limb; and under a pressure of 130 millimetres, it ran, in a full stream, from the divided extremity of the femoral vein.

The blood can be made to pass, therefore, through the capillary vessels by a force equal to the weight of 130 or 140 millimetres of mercury. But we have already seen that the pressure upon the blood in the arterial system is equal to 150 millimetres of mercury; and that it often rises to 160 or 170 millimetres. It is, accordingly, under this pressure, rendered equable and uniform by the arterial walls, that the blood moves steadily and continuously through the capillary vessels.

Beside, the blood is not altogether relieved from the influence of elasticity, after it has left the arteries. For the capillaries themselves are elastic, notwithstanding the delicate texture of their walls; and even the tissues of the organs which they traverse possess, in many instances, a considerable share of elasticity, owing to the minute elastic fibres which are scattered through their substance. These elastic

fibres are found in considerable quantity in the lungs, the spleen, the skin, the lobulated glands, and more or less in the mucous membranes. They are abundant, of course, in the fibrous tissues of the extremities, in the fasciæ, the tendons, and the intermuscular substance.

In the experiment of injecting the vessels of the lower extremity with defibrinated blood, if the injection be stopped, the blood does not instantly cease flowing from the extremity of the femoral vein, but continues for a short time, until the elasticity of the intervening parts is exhausted.

I have observed the same thing even in the liver. If the end of a water-pipe be inserted into the portal vein, and the liver injected with water under the pressure of a hydrant, the liquid will distend the vessels of the organ, and pass out by the hepatic veins. But if the portal vein be suddenly tied or compressed, so as to shut off the pressure from behind, the stream will continue to run, for several seconds afterward, from the hepatic vein, owing to the reaction of the organ itself upon the fluid contained in its vessels.

We must remember, also, that, as a general rule, the capillaries do not suffer any backward pressure from the venous system. On the contrary, as soon as the blood has been delivered into the veins, it is hurried onward toward the heart by the compression of the muscles and the action of the venous valves. The right side of the heart itself continues the same process, by its regular contractions, and by the action of its own valvular apparatus; so that the blood is constantly lifted away from the capillaries, by the muscular action of the surrounding parts.

I have shown you, furthermore, in a former lecture, how the natural movements of respiration tend to draw the blood inward from the venous system, and collect it toward the cavity of the chest.

We see, then, what are the mechanical influences under which the blood moves through the continuous round of the circulation. The heart, by its alternating contractions and relaxations, and by the backward play of its valves, continually urges the blood forward into the arterial system. The arteries, by their dilatable and elastic walls, convert the cardiac pulsations into a uniform and steady pressure. Under this pressure, the blood passes through the capillary vessels; and it is then carried backward to the heart through the veins, assisted by the action of the muscles and the respiratory movements of the chest.

The next point of interest in this connection is the *velocity* of the blood in these different parts of the circulatory system. This velocity

has been measured and estimated in various ways. Volkmann contrived a very ingenious apparatus for the arterial system, by which he found that the velocity of the blood in the larger arteries was about twelve inches per second. In the veins it is thought to be considerably less than this, viz., from six to eight inches per second. But in the capillaries its rate of movement is slower still; not more than one-thirtieth of an inch per second, according to the most probable estimates.

We can see this difference in the velocity of the blood perfectly well in examining the circulation by the microscope in a transparent membrane. In the arteries, even to their minutest ramifications, the current moves with excessive rapidity. The red globules are hurried along in the centre of the stream, while between them and the walls of the vessel there is a clear space, occupied by the fluid plasma and a few straggling white globules. In the smaller veins, on the other hand, the column of blood can be seen flowing away more slowly, though still with considerable rapidity.

But in the capillaries, the currents move in such a way that we can distinguish the individual globules. Sometimes they pass along in columns of two or three; sometimes they follow each other one by one, or in single file. Even here you can see that the red globules of the blood move more rapidly than the white, and often pass them in the same capillary vessel. The whole of the blood, however, is delayed for a time in the capillary plexus, and is then brought into proximate contact with the neighboring tissues. But this time is in reality very short; for the capillary vessels almost immediately unite with each other, and deliver the blood into the commencement of the venous system.

Consequently, there is very little distance intervening betwen the termination of the arteries and the commencement of the veins. The arteries divide and subdivide, till they reach the ultimate divisions of the organ to which they are distributed. Then they break up at once into capillaries, which immediately unite again into a small vein corresponding with the last arterial ramification. Thus, each intestinal villus has its own minute artery and vein, though it measures only 1-70th of an inch in width. Each acinus of the liver has its own capillary plexus, so that the distance from the termination of the portal veins to the commencement of the hepatic vein is not more than 1-25th of an inch. It will only require, therefore, a little over one second for the blood to pass through the entire capillary circulation

of the liver, since it penetrates the capillary plexus of all the acini at the same time.

This rapidity of the blood's passage from the arteries to the veins can be very finely seen in examining the circulation in the *frog's lung*, under the microscope. We can see there that each air-cell is surrounded by small branches of the pulmonary artery, and covered with an abundant capillary plexus, derived from the interlobular arteries. The blood is seen pouring from the small arteries into the circumference of the capillary plexus. But about the centre of the air-cell it is immediately collected by a pulmonary vein, and carried away toward the left side of the heart.

The actual passage of the blood, therefore, through the capillary system, is rapid, though its rate of movement in these vessels is comparatively slow.

This brings us, gentlemen, to a very curious and interesting point in the history of the circulatory function; that is, the *rapidity of the entire circulation throughout the vascular system.* How much time is required for the blood to pass through the entire round of the circulatory apparatus, so as to return again to its original starting-point?

The experiments performed in regard to this subject have led to the most striking results. They show how much more rapid are the processes of nutrition and circulation in the living body than we should be led to believe *à priori*. For the investigations of Poisseuille, Hering, and Blake, all agree in this particular, and show that the time required for a complete circulation through both arterial and venous systems is not more than about twenty-five or thirty seconds.

The experiments were first performed by injecting into the jugular vein of a large animal some substance which could be easily recognized by chemical tests, such as nitrate of baryta, or ferrocyanide of potassium. At the same time the animal was bled from the opposite jugular vein by a small opening; and from twenty-five to thirty seconds after the commencement of the injection, the blood, drawn from the opposite jugular, contained traces of the substance injected.

By extending these investigations to different animals, it was found that the duration of the circulatory movement varied, to some extent, with the size and species. In the larger quadrupeds, as a general rule, it was longer; in the smaller the time required was less.

In the	horse,	the mean	duration	was	28	seconds.
"	dog	"	"	"	15	"
"	goat	"	"	"	13	"
"	fox	"	"	"	12½	"
"	rabbit	"	"	"	7	"

Now, when these results were first published, it was very difficult to believe that the circulation was really so rapid as they would make it appear. It was thought that the saline matter, which was injected, "traveled faster than the blood;" that it became "diffused" through the circulating fluid; that it transuded through dividing membranes; or passed round to the point at which it was detected, by some short and irregular route.

But none of these explanations have ever been found to be correct. They are all really more improbable than the fact which they are intended to explain. The physical diffusion of liquids does not take place with anything like the rapidity manifested by the circulation; and there is no other route so likely to give passage to the injected fluid, as the blood-vessels and the movement of the blood itself. Beside, the first experiments of Poisseuille and others have not been invalidated since, in any essential particular. It was found, it is true, that certain other substances, injected at the same time with the saline matter, might hasten or retard the circulation to a certain degree. But these variations were not very marked, and never exceeded the limits of from eighteen to forty-five seconds.

Here is a full-grown dog, upon which I will now do a similar experiment, by injecting into the blood a solution of ferrocyanide of potassium. This salt, you remember, is recognized by instantly striking a deep-blue color, when brought into contact with a persalt of iron.

The animal was etherized an hour or two ago, and the external jugular vein was at that time dissected out, on each side of the neck, so that it is now readily exposed. I will now make an opening in the vein of the left side, and withdraw a few drachms of blood, which is to be set aside in a capsule for examination. I have here, also, a solution containing ten grains of ferrocyanide of potassium in two drachms of water, which I will inject into the left jugular vein by a glass syringe. The injection, you perceive, is made slowly, in order to avoid disturbing the pulmonary and cardiac circulations. The injection is now finished; and the animal does not show any sign of discomfort.

I now immediately uncover the jugular vein of the right side, and making an opening in it, draw off a small quantity of blood.

Here, then, we have two specimens of blood: one from the left jugular vein immediately before the injection, the other from the right jugular immediately afterward. They are both treated with an excess of sulphate of soda to coagulate the coloring matter, and then boiled over a spirit-lamp, with a little water. On throwing the coagulated mass upon a filter, the filtered fluid in each case comes through clear, transparent, and nearly colorless.

I will now treat both solutions by the addition of a little perchloride of iron. In the first, you observe, no effect is produced. In the socond, a distinct blue color immediately appears, showing the presence of ferrocyanide of potassium.

In that short space of time, therefore, the salt injected into the vein had passed, with the venous blood, down to the right cavities of the heart, through the pulmonary artery and the capillaries of the lungs, had returned to the left side of the heart, passed out by the aorta and carotid artery, penetrated the capillaries of the head and neck, and had returned part way to the chest by the right jugular vein.

There is no doubt that the blood itself makes the same circuit in very nearly the same interval of time.

From this circumstance, we can understand how certain poisonous subtances exert their action so rapidly, when introduced directly into the circulation. *Strychnine*, for example, has a specific action upon the spinal cord. It induces in that organ an excessive irritability, and this causes spasmodic contraction of the voluntary muscles. If introduced into the venous system, it is immediately carried to the heart, passes through the pulmonary circulation, returns to the left ventricle, as sent out with the arterial blood, arrives at the spinal cord, and produces its specific effects in the short space of sixteen seconds. If poisons are introduced into the alimentary canal, they require a longer time to produce their effects, owing to the delay required for absorption; but once received into the circulation, they are distributed with great rapidity throughout the vascular system, and are thus brought in contact with the organs upon which they act.

You can very easily see, however, that the blood does not pass everywhere through the capillary circulation, and return to the heart from all parts of the body, in precisely the same time. On the contrary, the distance of the organs from the heart, and the arrangement of their vessels, will modify, to some extent, the time required for the return of the circulating fluid.

This leads us to the study of another topic connected with our present subject, viz., the *variations of the circulation in different parts of the body.*

Many of these variations depend on the anatomical structure of the parts, or of the vessels which supply them. The arteries, for example, as a general rule, divide and separate from each other, in passing to the various organs, but do not inosculate. There are certain parts, however, in which the arteries are distinguished by a very free and

abundant inosculation. The mesenteric arteries, in particular, divide into branches which almost immediately unite with each other again, in the form of arches. In this plate, you see the arrangement of these vascular inosculations. From the convexities of the arches, are given off lateral branches, which again unite with each other, forming a second set of arterial loops; and so on, until the intestine is finally supplied with their ultimate ramifications; so that from three to five sets of vascular loops are formed in the mesentery, the inosculating branches becoming smaller and more numerous as they approach the border of the intestine.

This arrangement provides for the regular supply of blood to that part of the alimentary canal. For the intestine moves and changes its position during the digestive process. Different portions of the gut are liable to overlap and compress the mesenteric arteries, while the peristaltic motion is going on; and the abundant inosculation of these vessels, accordingly, prevents the stagnation of the blood, and secures the continuance of the intestinal circulation.

A similar peculiarity is seen in the palm of the hand and the sole of the foot. The palmar and plantar arches are formed by the union of the two principal arteries of the hand and foot, and give off, from their convexities, the branches which supply the parts below. This arrangement is required by the frequent motion of the bones and the contraction of the muscles in their neighborhood.

In the head there is, as you remember, a very remarkable arterial communication at the base of the brain, known as the *Circle of Willis.* The internal carotids unite with each other in front, by a transverse inosculation, and with the basilar artery behind by lateral branches; while the basilar artery itself is formed by the union of the right and left vertebrals. Thus the brain is supplied by four large arteries, all freely communicating with each other; and if either of them should happen to be obstructed by the movements of the head and neck, or by accidental pressure from without, the cerebral substance will still continue to be supplied with blood. It is this which makes it possible to do the operation of ligature upon the common carotid artery, without seriously disturbing the cerebral circulation.

Now, these inosculations are nearly constant in their occurrence, in all the higher animals, as well as in man. But beside them, there are some instances in which the arteries, in certain parts of the body, divide into a great many branches, which afterward unite with each other, so as to form a kind of arterial network, or plexus, which is known by the name of the *rete mirabile.* Such a plexus is found in the

cranial cavity of the sheep, and other ruminating animals. It is supplied by the internal carotid artery, which breaks up into a mass of small inosculating vessels, situated on the two sides of the sella turcica. These vessels again unite into the trunk of the internal carotid, which then finally divides to form the circle of Willis.

In the *cat*, there is a rete mirabile in the track of the external carotid, just behind the condyle of the lower jaw. In the *sloths*, there are similar plexuses, connected with the arteries of the limbs. In the *whales* and the *porpoises*, they are developed in great abundance, in the cavity of the chest, along the sides of the spinal column.

The effect of these arterial divisions and inosculations is, of course, to moderate and equalize more completely the shock of the heart's impulse. For by such a contrivance the extent of vascular surface is increased, in proportion to the quantity of blood which the arteries contain. Therefore, the movement of the blood, after passing through an arterial plexus, must be more uniform and continuous than before, and less likely to injure a delicate organ by the shock of the cardiac pulsations.

This is probably, in great measure, the function of the rete mirabile. In the ruminating animals, for example, while grazing, the head is held for a long time, in a dependant position, and is then more or less liable to congestion. Now, whenever the arteries are over-distended or congested, the shock of the heart's impulse is felt at a greater distance than usual, because the elasticity of the vessels is, for the time, counteracted. But by a multiplication of the vascular surface, its modifying power is, of course, increased, and the circulation through the brain may then go on in its ordinary uniform manner.

What makes it more probable that this should be the main use of such arterial plexuses, is their remarkable development in the diving animals, such as whales, porpoises, and seals. While under water, respiration in these animals is suspended; and we already know that a suspension of respiration induces a general congestion of the arterial system. But by the existence of arterial plexuses in the course of the carotid and intercostal arteries, the brain and spinal cord are protected, in some degree, from the effects of such a congestion, and preserved from the violence of the cardiac pulsations.

Beside these peculiarities in the arterial system, there are others which affect the *veins* in different parts of the body.

In certain cases, for example, the veins are supplied with an abundant layer of muscular fibres, and exhibit a regular pulsation, like that of the heart. This is the case with the venæ cavæ, in the turtle, and in certain other species of reptiles.

Here you see a turtle, in which the anterior part of the shell has been destroyed, showing the heart and adjacent vessels. Notwithstanding that the brain and medulla oblongata have been removed, the cardiac pulsations are still going on. On lifting upward the point of the heart, you see the two venæ cavæ, right and left, which are pulsating regularly, and with a considerable degree of vigor. The contraction of these vessels takes place just before that of the auricles, so that you have here three different organs pulsating, one after the other, in regular order; viz.: 1st, The venæ cavæ; 2d, the auricles; and 3d, the ventricle.

The veins of the bat's wing have also been seen to contract with a regular pulsating movement, independently of the action of the heart.

But there is one part of the venous system which exhibits a still more marked peculiarity, both in its anatomical and physiological relations; that is the *portal system of the abdomen.* Here, the vessels distributed to the stomach, the spleen, the pancreas, and the intestine, unite, as usual, into a single venous trunk, the *portal vein;* but this vein, instead of conveying the blood directly to the heart, penetrates the liver, and there breaks up into a second capillary plexus, which supplies the tissue of the organ, and then terminates in the hepatic vein. In the abdominal circulation, therefore, the blood passes through two successive capillary systems before returning to the heart: first, that of the digestive apparatus; and secondly, that of the liver.

However, we have already seen that the pressure under which the blood circulates in the arteries is sufficient to carry it through both these capillary systems, and to discharge it into the hepatic veins.

A few years ago, Bernard made the discovery that, in some instances, the whole of the portal blood is not compelled to pass through the hepatic circulation, but that a part of it may reach the vena cava by a shorter route. He found that in the horse, for example, there were certain communications between the portal vein and the vena cava, below the liver; and he regarded these inosculations as a means of relieving the hepatic circulation of a portion of the blood, coming from the abdominal organs.

In this preparation, you can see the communications of which I am speaking. It is a portion of the inferior vena cava of the horse, cut off just below the level of the liver. On the outside of the vessel you can see several branches of the portal vein, of considerable size, which ramify in its walls. They have been cut open for a certain part of their course, and, if traced for a short distance farther, they are seen to open, by small orifices, on the internal surface of the vena cava.

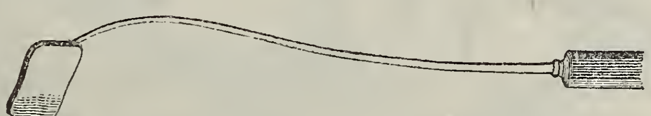
By these branches, therefore, a small quantity of the portal blood finds its way directly into the vena cava; though the greater part of it still passes through the capillary vessels of the hepatic tissue.

These are the most striking peculiarities in the form and action of the circulatory apparatus in different regions of the body. But we must remember, at the same time, that the arrangement of the capillary blood-vessels presents distinct varieties in all the different organs and tissues; and there is no doubt, that this difference produces certain peculiarities of the capillary circulation in each, dependent on the length and diameter of the minute vessels, their abundance, and the frequency of their inosculation. All these particulars influence, more or less, the movement of the blood, and give a peculiar character to the local phenomena of *the circulation.*

The Laryngoscope of Prof. Czermak. By Hugo Stangenwald, M.D.

Read before the New York Medico-Chirurgical College, June 14, 1860.

The principal part of this simple and useful instrument consists of a small metallic mirror attached to a long flexible handle, which is introduced into the cavity of the fauces to aid in physiological and pathological investigations.

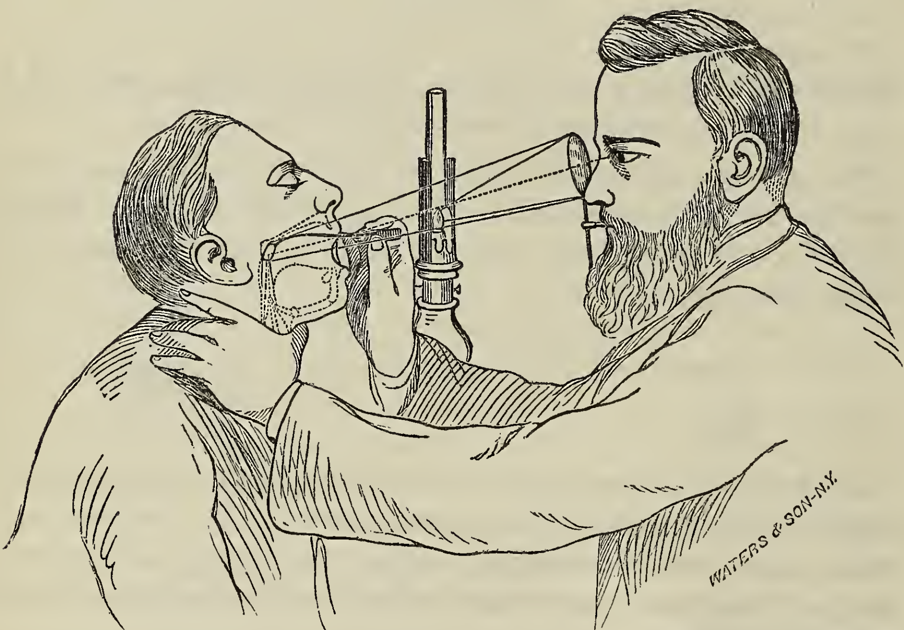


The flexibility of the handle allows of the adjustment of the mirror under different angles, and in order to prevent the condensation of watery vapor upon the reflecting surface, it is gently heated over a lamp, or dipped into warm water, before it is introduced into the cavity for observation.

The earliest mention of such an instrument for diagnostic purposes, we find as far back as 1840, in a work on "Practical Surgery," by Robt. Liston, Esq. Under the head of "*Ulcerated Glottis,*" Mr. Liston says :

" A view of the parts may be sometimes obtained by means of a speculum—such a glass as is used by dentists on a long stalk—previously dipped into hot water, introduced with its reflecting surface downward, and carried well into the fauces." In November, 1855, M. Garcia published in the *Philosophical Magazine and Journal of*

Science his "Observations on the Human Voice," in which he published a number of very interesting and accurate experiments, demonstrating the formation of the voice and the position of the vocal organs. After him, in the winter of 1857, Dr. John N. Czermak, Professor of Physiology, at the University of Pest, in Hungary, commenced his laryngoscopic investigations, respecting the formation of the Arabian guttural sounds, at the same time repeating the experiments of Garcia; and while thus engaged, became aware of the truly practical importance of the instrument for diagnostic purposes. By an article in the *Vienna Medical Weekly*, of March, 1858, he gave the first impulse, by calling the attention of medical men to the importance of its use, and recommended its adoption as a valuable means of diagnosis. In June of the same year, Dr. Türk, of Vienna, also published his observations on the laryngoscope and its manipulations.



Without entering any further into its history, I shall proceed to describe the second part of the instrument. This consists of a large concave mirror of about 8 to 12 inches focal distance, and three or four inches diameter, arranged on the well-known principle of the ophthalmoscope, which serves to reflect the light of an Argand burner, or gas flame, upon the surface of the small metallic mirror, while the latter is held skillfully and carefully in the cavity of the pharynx under a proper angle. The image is observed through the circular aperture in its centre, thus making the centre of reflection at the same time the central point of observation, and consequently losing a very small amount of light. When it is desirable to have both hands free

for use, the mirror, freely movable by screws in all directions, is attached to a support of soft wood or orris-root, by means of which it may be firmly held between the teeth, thus enabling the operator to use a spatula, probang, or other surgical instrument, with perfect ease. The use of the spatula, however, will but rarely be necessary; for if the patient puts his tongue far enough forward, so as to form a long central cavity on its surface, continuing all the while to breathe naturally, no great difficulty will be experienced in introducing the mirror into the pharynx; while at the same time, by stretching the tongue forward, the epiglottis will be lifted off from the aperture of the glottis, and by pronouncing forcibly certain sounds, the cordæ vocales will be brought into full view.

On pronouncing the long sound a, (as in fate,) these will be seen to open, allowing the inspection of the parts beneath. After becoming a little accustomed and skilled in the use of the hand holding the small steel mirror, so as not to produce any undue pressure on the parts concerned, which might distress the patient, we find no difficulty in bringing into view such parts as the back of the tongue, the epiglottis, the arythenoid cartilages, the true and false vocal cords, the ventriculi Morgagni, and the anterior walls of the larynx and trachea. This would certainly be sufficient inducement to adopt the use of the instrument for diagnosticating pathological changes in those parts; but even more may be done by persevering and skillful efforts.

During my recent European tour, I visited Prof. Czermak at Pest, and was invited by him to examine several patients at a private clinique, suffering from polypi, and other diseases of the vocal organs, which could be seen with surprising clearness and distinctness by means of his laryngoscope. Yet the full capability of the instrument appeared in its true bearing, when he proceeded to exhibit to me on himself, not alone the above-mentioned parts, but also the whole anterior wall of the trachea, and twice during the course of the evening *the bifurcation of the trachea* itself. The latter could, probably, only be attained by great perseverance and careful training, yet goes to show what might be accomplished by the use of this instrument in skillful hands. I had heard of his ability to show the bifurcation of the trachea before I came to Hungary, but had smiled incredulously at the idea of its being possible to see the same in a living individual, yet I went away convinced and perfectly satisfied on the subject.

While repeating the above experiment, it is necessary to remember the anatomical curve of the trachea, and obviate its convexity forward by resting the back firmly against the corner of a sofa or

easy-chair, and bending the head and neck slightly forward. For inspecting the epiglottis and vocal cords merely, the patient is seated in front of the operator, his hands supported upon his knees, the upper part of the body and neck inclining somewhat forward, and the mouth open as wide as possible. The only difficulty in the operation is the amount of skill requisite to manipulate the small mirror, so as to bring the required parts into view, and to get the eye accustomed to the appearance and relative position of the parts when thus shown *reversed*, according to the laws of reflection of light. This, however, is easily acquired after a few experiments. The temperature of the mirror must of course be such as not to cause pain to the patient, and is most conveniently tested by the feeling of the operator before its introduction. When there is great irritability of the parts, several trials may be necessary before we can accomplish our object; yet that sensibility gradually subsides by continued use, and when it is excessive it may be modified by applying previously a solution of nitrate of silver of moderate strength.

I ought also to mention that this instrument, in somewhat modified forms, has been used by Prof. Czermak for examining the posterior wall of the soft palate, the upper wall of the pharynx, (cavum pharyngo-nasale,) and the nasal cavities, as well as the orifices of the Eustachian tubes, all of which I had the pleasure to witness during my visit. The upper part of the larynx and the lower parts of the epiglottis have likewise been examined by means of a very small mirror introduced through the canula of a straight trachea tube, in cases where there existed perfect closure of the glottis from disease. The mirror used for this purpose being necessarily very small, great difficulty was experienced to prevent its cooling too rapidly, till it was found that by covering the reflecting surface by a thin and even layer of a saturated solution of gum-Arabic, this trouble might be avoided for a considerable length of time.

On my return to Paris, M. Charrière requested the use of the present instrument as a pattern, and a number of physicians expressed themselves well satisfied with its performance on my exhibiting the same at the Hôpital des Enfants, and several other hospitals of Paris. And since my return the instrument has been frequently used at the office of Dr. Horace Green, No. 12 Clinton Place, where, in a number of instances, it has verified by the sense of sight, and in a most interesting manner, the rational diagnosis previously made.

Perhaps I should add that Mr. Ford, a skillful instrument-maker of this city, has also perfectly imitated this instrument after the pres-

ent pattern, and is now manufacturing the same at his establishment, No. 85 Fulton Street, for the use of the profession.

NEW YORK, *June* 14, 1860.

Lectures on Displacements of the Uterus. By E. R. PEASLEE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children, in the New York Medical College.

LECTURE V.

GENTLEMEN—The displacements of the uterus backward are next to be considered. The first case of this kind recorded in England was observed by Dr. Wm. Hunter, about 100 years since, (1754,) and by him termed retroversion; though the same displacement had previously been described in France, by Desgranges, (1715,) and Gregoire, (1746.)

These first-observed cases all occurred during pregnancy, and it remained unknown, for a long time subsequently, that backward displacements affect the unimpregnated uterus. And when at length the fact was observed, the term retroversion was still applied to all cases. It was, however, an important step in advance to distinguish between retroversion and retroflexion. And we shall find that most cases which occur during pregnancy, or soon after parturition, (or miscarriage,) are, like the case described by Dr. Hunter, properly termed retroversion; while those occurring under other circumstances are quite different in their nature and characters, and are therefore properly known by another term—retroflexion. Dr. Simpson, however, regards these two displacements as differing only in degrees; and Dr. Meigs merely alludes to retroflexion as if an unimportant subject.

Much confusion has resulted from including all antero-posterior displacements of the uterus under the same term—retroversion; and I shall therefore preserve and make prominent the following distinctions in what I have to say on this class of displacements:

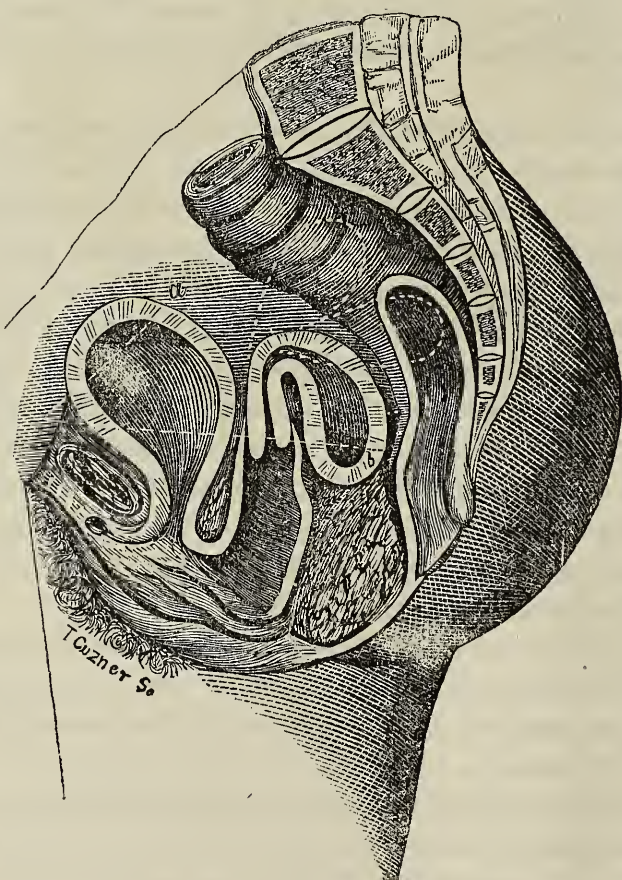
1. In *retroflexion*, the *body alone* of the uterus is displaced backward, it being flexed at its junction with the cervix, as Dr. Beattie, several years ago, (1847,) observed. Virchow has explained this, by the fact that the anterior wall of the uterus is thinner, and therefore the uterus is weaker, at this point than elsewhere; while the peritoneum is also at this level reflected from the uterus upon the bladder; thus leaving the whole body unsupported by it above and in front; while the whole of

the cervix is kept in position in front, by its firm attachment to the bladder.

2. In *retroversion* the *whole* uterus falls backward, without any flexion of the body upon the neck.

The seat of flexion in case of retroflexion may be, but very rarely is, a little below the junction of the body with the cervix. The latter may also be bent, or curved upon itself, either posteriorly or anteriorly; while the body remains in its normal position. But these are cases of flexions of the cervix uteri; and not to be considered in connection with retroflexion and retroversion.

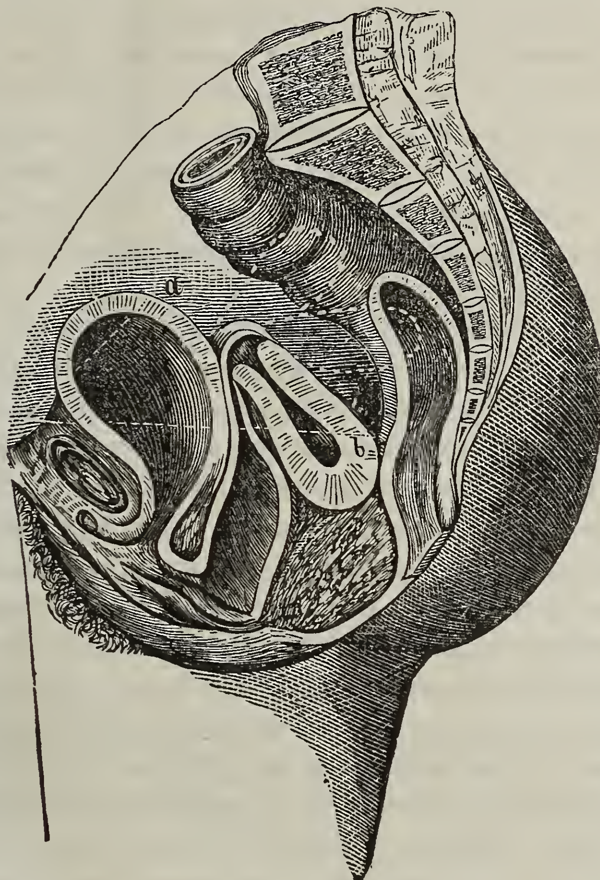
But to be more explicit, I should say *retroflexion* of the womb is a displacement backward, and more or less downward, of the body of that organ, while the cervix maintains its normal relations; the seat of the flexion being at the junction of the body with the cervix. (Fig. 5.)



(Fig. 5.)

Retroflexion, third degree; or complete posterior reduplication. The body of the uterus is hypertrophied and elongated, and the cervix also elongated, as occurs in some chronic cases. The anterior lip is drawn too long. The dotted lines above indicate the first and second degrees of retroflexion. The distance *a* to *b*, on the straight lines, indicates the amount of elongation of the round ligaments, while the uterus is passing from its natural position to the third degree of retroflexion.

Retroversion is also a displacement of the body backward and downward; but, at the same time, the cervix is displaced upward and forward, so that the relations to each other of the different portions of the longitudinal axis of the uterus remain unchanged. Thus, the uterus is not flexed at all upon itself, but it comes to occupy an antero-posterior position in the pelvis, the fundus pointing backward. (Fig. 6.)



(Fig. 6.)

Retroversion, third degree. Body of uterus somewhat congested. The curved dotted lines indicate the first and second degrees of retroversion. The straight dotted lines as in the preceding figure, modified from Meigs.

We may recognize three degrees of each of these displacements, the *body* of the uterus being in the same position in the same degree of each. In the first degree of each, the body lies between the superior and the middle plane of the pelvis; while in the second degree it lies in or below the middle plane. (See dotted lines in figs. 5 and 6.) In the third degree of retroflexion and retroversion, the body of the uterus falls back into the Douglass *cul-de-sac*, between the posterior wall of the vagina and the rectum. (Fig. 1.) In the third degree of retroflexion, therefore, the uterus is in a state of complete *reduplication*

backward. (Fig. 5.) The neck, also, of the uterus is displaced forward, and in varying degrees in retroversion, but not at all in retroflexion. (Fig. 5.)

These are the general facts in respect to retroflexion and retroversion. But we meet with all possible variations between complete reduplication, the cervix still remaining *in situ*, and the first degree of retroversion, the uterus being still straight, but displaced backward, as before explained. Especially do we meet with these varieties in married women who have not had children. Not seldom, the body of the uterus lies in the Douglâss *cul-de-sac*, while the neck points too far forward, but not so as to be in a line with the body. In other words, the uterus is flexed backward in the third degree, though the cervix is in a position intermediate between that of retroflexion and retroversion, as before explained. It is such cases, doubtless, which have led Dr. Simpson to regard retroflexion and retroversion as differing only in degree; a view which, whether we consider their etiology or their treatment, I am unable to adopt. Sometimes we also find the first degree of prolapsus complicated with retroflexion.

In regard to the relative frequency of these two displacements, I should say that retroflexion is by far the more frequent. Retroversion is extremely rare, except as it occurs during pregnancy or after delivery, either premature or at time; though in these circumstances it is more common than retroflexion. In women married or otherwise, who have not borne children, retroflexion is, in my experience, far more common, also, than prolapsus; and decidedly more common than the latter; also, in those who have become mothers. Dr. Meigs states* that 75 per cent. of all the uterine disorders and displacements, that are subject to his inquiries, are cases of retroversion. I have, however, found many cases of retroflexion to one of retroversion; and that both kinds of posterior displacements do not together outnumber the cases of prolapse, with the anterior displacements. I cannot, therefore, with Dr. Meigs, regard retroversion as one of the most common deviations met in practice. (p. 252.)

In explaining the *mechanism* of these displacements, we must again refer to the account of the normal position and the natural supports of the uterus in the first lecture, (p. 164–7,) and assume that the *round ligaments* have become more or less stretched and elongated in the three different degrees. The dotted lines *a*, *b*, in Figs. 5, 6, show how much elongation is necessary in the third degree of both retro-

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* Woman and her Diseases, p. 235.

flexion and retroversion. The *broad* ligaments must also have yielded to tension, and have lost their power of affording their usual support, in both kinds of displacements. In simple retroflexion, however, the *utero-rectal* ligaments still maintain their tone; while in retroversion they have become elongated. This also occurs, of course, in those cases of retroflexion in which the cervix is also displaced forward. If prolapsus occurs in connection with retroflexion, the vagina will be found to have lost its tone, and the other conditions mentioned in the third lecture (p. 433) may also obtain.

It will be seen that the first degree of retroversion differs in its mechanism from the second degree of prolapsus, (Lect. 3, p. 433,) merely in the fact that the neck of the uterus points towards and usually above the pubal arch, instead of descending in the vagina.

Causes of Retroflexion and Retroversion.

1. Of *retroflexion*, the *predisposing* causes are, all agencies which stretch or relax the round ligaments; as an habitually distended state of the bladder, and the relaxation occurring in consequence of parturition, (or abortion,) and in some cases of menstruation. It is also doubtless true that a long, much curved, and strong vagina predisposes to the posterior (and the anterior) displacements; as shortness of this canal gives a predisposition to prolapsus. Retroflexion is, therefore, more common in tall women, in whom the uterus is situated high in the pelvis. The *direct* causes are ovarian and other tumors, in the anterior portion of the pelvis; a fibrous tumor in the anterior wall of the uterus, crowding the body backward, or in the posterior wall, dragging it (if not too large) downward by its weight. Tight dressing, or too much weight of apparel, may also directly force the intestines downward, and thus carry the womb backward or forward, according to circumstances—backward, if the round ligaments are already relaxed and stretched by the agencies above mentioned. For though the small intestines normally fall round the uterus and support it on all sides, if it become at all inclined backward they must accumulate in front of it, and thus at once displace it still more posteriorly. An increased weight of the uterus may also become a direct cause of retroflexion, if the ligaments are relaxed, as before explained. In cases of parturition, (or abortion,) this increase of weight coexists with the relaxation of the ligaments already mentioned as accompanying these conditions; and congestion of the uterus and increased weight attend the catamenial function. Some ascribe retroflexion (and retroversion) to congestion, from any cause, of the

posterior wall alone of the uterus, as they do anteflexion and anteversion to that of the anterior wall. Such limited congestion is, however, I think, far more frequently an effect than a cause. Polypus and hypertrophy of the uterus are also to be mentioned here. Habitual constipation may, from the efforts in defecation it necessitates, become an indirect cause of retroflexion. And an habitually loaded state of the sigmoid flexure may directly force the fundus uteri backward to the first degree, and the efforts just mentioned may carry it on to the second or third degree of retroflexion. While, however, these causes generally act very gradually in the production of retroflexion, the following may induce it at once: lifting, leaping, dancing, coughing, vomiting, and above all, rising too soon after parturition.

2. Of *retroversion*, both the predisposing and the direct causes may be the same as those of retroflexion; *i. e.*, the same cause or causes acting in different circumstances may produce sometimes retroflexion, and at others retroversion. I will not, therefore, here repeat the causes just mentioned, but request particular attention to the fact that retroversion in a vast majority of cases occurs during pregnancy, or soon after parturition or abortion. Dr. W. Hunter's case, already alluded to, occurred during the fourth month of gestation. True retroflexion very rarely occurs during pregnancy, though it is not uncommon after abortion or parturition. It is an interesting fact in this connection, that the wood-cuts representing simple retroflexion in some works on this subject, are copied from Mad. Boivin's work; in which the original represented *retroversion* of the *pregnant* uterus in the fourth month of gestation.

The main predisposing cause of retroversion, to be insisted on here, is the increased weight of the pregnant uterus. And this alone may gradually induce this displacement; or a blow on the abdomen, or a fall, or a sudden effort, may at once produce it. The action of a powerful cathartic has also been known to produce it.

All these causes are supposed to act during pregnancy to produce retroversion; and doubtless a great size of the pelvis, a great prominence of the sacro-vertebral angle, and a deeply-curved sacrum, decidedly predispose to it in this condition. But it may also be gradually induced by a pelvic tumor, an enlarged ovary, by prolapsus uteri, ascites, and by extra-uterine pregnancy. Finally, both these displacements may occur at any time after puberty, from the causes above mentioned; and may also be found as the result of congenital malformation at the earliest period after birth.

Symptoms of Retroflexion and Retroversion.—The rational signs of

these displacements are not distinctive, except when they are suddenly induced, as by a fall, or by an effort; but are those common to the various uterine affections mentioned in the first lecture, (p. 168.)

I shall speak first of the signs of retroflexion (and retroversion) when gradually induced, as is the case in a great majority of cases; and then of retroversion, (and retroflexion,) when suddenly brought on, as it most commonly is when occurring during pregnancy.

I. Retroflexion sometimes exists a long time, without producing any decided local symptoms; and is at last detected by one who is familiar with the nervous and other general symptoms to which it has given rise. The intensity of the symptoms, however, depends much on the temperament of the patient; a nervous woman suffering far more from the slightest displacement than one of lymphatic temperament does in the third degree of it. In most cases, no very decided local symptoms are produced by the first degree of retroflexion; but in the second or third degrees, they become more marked. Menstruation is generally affected, it becoming menorrhagic or dysmenorrhœal. There is profuse leucorrhœa in most cases; and micturition is frequent or painful, or both, though there is no retention of urine, as there is in retroversion during pregnancy. There is a constant aching pain in the back; and uneasiness in the hypogastrium and groins, from tension of the peritoneum. In the third degree of retroflexion there is a feeling of weight or pressure in the rectum or anus, and difficulty in defecation. Pain also extends down the limbs, especially the left, from pressure on the sacral nerves. Not seldom the patient experiences a feeling as if something closes up the rectum like a valve, as soon as an effort is made in defecation; this being due to the pressure of the fundus uteri, in the Douglass *cul-de-sac.* The distress is increased by any considerable effort, and by standing and walking; and during the catamenial period. At length, the general health becomes deranged, and the spirits depressed, as in the other uterine affections. (See Lect. 3, p. 427–9.

Proceeding next to the *physical* signs of retroflexion, we find, by a *per vaginam* examination, that in the third degree of this displacement, the os and cervix are in their natural position; but on pressing the finger behind the cervix, a rather firm and quite tender tumor is felt, and which often seems to be continuous with the cervix above, and may be mistaken for a tumor of the posterior wall of the uterus. It is, however, merely the fundus uteri lodged in the Douglass *cul-de-sac,* and its tenderness is, I should say, generally due to a congestion ensuing upon its displacement; and is not generally resident in one of the ovaries,

as maintained by Mr. Safford Lee. It must also be added, that the ovary is often forced down in this displacement, and may be reached by the finger and distinguished from the uterus itself.

Per rectum, the same tumor is felt projecting against the anterior wall of this canal; and since the finger can be carried thus still higher into the pelvis, it may thus elevate the fundus more, and more completely isolate it from the cervix or from the ovary, as the case may be. I shall show how retroflexion is to be distinguished from a displaced ovary, a fibrous tumor, or an inflammation of the posterior wall, when I come to speak of the diagnosis. In the second degree of retroflexion, the fundus does not fall so low; and in the first it may not be reached at all.

But if doubt still remain, we resort to the *uterine sound*. In its introduction, let the patient lie upon the back, and in such a way that its handle can be depressed to the required extent between the thighs. And this can be effected in private practice by placing the patient across a bed so that the nates come to its edge, while her feet rest upon a stool, and the whole person is covered by a sheet. The instrument, guided by the left index finger, may be passed into the canal of the cervix, in its usual position; *i. e.*, with its concavity upward. But in the third degree of retroflexion, when it arrives at the point of flexion, the instrument is rotated half round and the handle then elevated; when, following the direction of the uterine cavity, it enters the same. Next, the instrument is rotated half round again, and in such a way as to rotate its intra-uterine portion, as nearly as may be, on its own axis, in order to avoid injury to the uterine lining membrane; and finally, by depressing the handle, the body of the uterus is restored to its normal position. And now the tumor, at first reached *per vaginam* and *per rectum*, can no longer be felt. In cases of complete reduplication backward, it may be difficult or impossible to pass the instrument beyond the seat of the flexure, unless the left index finger is used to elevate the fundus *per vaginam*, while the right hand guides the instrument.

I have already stated that the os and cervix uteri are not always in their natural position in retroflexion. The former may be, though it is very rarely, too far behind or in front; though it never points above the arch of the pubis, as is the case in retroversion. The precise relation of the os and cervix are, of course, to be previously ascertained, if we would readily introduce the sound; though, on the other hand, it alone can, in some of these cases, determine where, and how related to the cervix, the body of the uterus is.

I have already alluded to the danger, if there be any, in the use of the uterine sound, (Lect. 1, p. 169.) It is, of course, not to be used to replace the pregnant uterus; nor too soon (within 48 to 72 hours) after the catamenial period; nor if ovaritis be a complication with this displacement. If carefully used, however, it generally produces no decided pain or uneasiness at the time or subsequently. It is merely followed by a hæmorrhage, generally amounting to but a few drops.

The rational signs of *retroversion*, when gradually induced in the *unimpregnated* uterus, are essentially the same as those of retroflexion. The physical signs, however, differ, inasmuch as the os uteri is found presenting forward, above the arch of the pubes; and the cervix is felt, *per vaginam*, to be in a line with the body of the uterus. The anterior wall of the vagina is found to be elongated and tense, while the posterior falls into folds. Sometimes it is difficult to reach the os uteri, on account of its elevation, until the fundus is first elevated, which brings the former somewhat lower down. In such cases, the sound cannot, of course, at first be introduced; and it is usually passed most readily, (after the fundus is elevated,) with its concavity looking downward. The sound, however, is seldom needed to complete the diagnosis of retroversion; but only to replace the womb.

II. I now come to speak of the signs of *retroversion* (and retroflexion) when *suddenly induced;* and especially as occurring during the first four months of pregnancy.

The rational signs of retroversion occurring, as just explained, are usually very urgent and severe. There is a sensation of a sudden falling of the womb, pressure upon the rectum, nausea, vomiting, perhaps syncope, dragging pain in the groins or sacrum, and frequent and painful micturition. Soon, however, complete retention of the urine ensues in retroversion occurring during pregnancy. This is due to the direct pressure of the cervix uteri against the urethra, or, in some cases, the neck of the bladder. A constant dribbling of urine occurs in some cases, and which should always suggest the idea that the bladder is distended; though it has often deceived the medical attendant into the notion that the urine is flowing from the bladder as fast as it is secreted. There is also, in most cases occurring in pregnancy, a forcing effort simulating labor-pains, and threatening abortion. Febrile reaction ensues, and if the bladder is not evacuated it may even burst; unless the urine dribbles away, and the patient is thus saved for the present, to die subsequently, if not relieved, of irritation, inflammation, or sloughing of the bladder. (Dr. Gooch.)

The *physical* signs of retroversion occurring during pregnancy are the same as those of retroversion of the unimpregnated womb mentioned on page 27, but more prominent, since the uterus is larger; and I will not repeat them here. The vagina is found to be elongated and its course changed; it coming forward at its upper part towards the pubes, and not extending backward towards the rectum. Its anterior wall is tense and elongated, while the posterior wall is thrown into folds. The os uteri points towards or above the arch of the pubes; and if the case be one of retroversion in the third degree, it probably cannot be reached with the finger at all.*

I have nothing to add respecting the symptoms of retroflexion suddenly occurring in early pregnancy, except that its occurrence is far more rare than that of retroversion; that its rational symptoms are essentially the same; and that the different physical conditions are at once made out by a vaginal examination.

Diagnosis of Retroflexion and Retroversion.

I. *Retroflexion* (and retroversion) of the *unimpregnated* uterus may be distinguished from the following conditions in the following manner:

1. From *fibrous tumor in the posterior wall of the uterus.* The tumor is, generally, not tender; the fundus uteri is so; but in case of tumor the uterine sound passes in the normal direction.

2. From *inflammation of the posterior wall of the uterus.* The sound determines, as just explained. The cases of this form of inflammation are, I think, very rare.

3. From a *displaced ovary.* The latter is usually more tender, even, if inflamed, than the retroflexed fundus; but the sound at once isolates the latter from the ovary, whether *in situ* or displaced.

4. From an *ovarian tumor.* The sound isolates the uterus, as just explained. If, therefore, an ovarian tumor be complicated with retroflexion, the sound will determine both facts at once.

5. From *inflammation of the areolar tissue between the rectum and vagina*, causing an exudation there. The sound determines.

6. From *organic lesions in either wall of the rectum.* Here again the sound decides.

7. From *early pregnancy.* Very difficult to decide without the use

* The Fig. 31, p. 325, American edition of Churchill's work on Diseases of Women, intended to illustrate "retroflexion and retroversion" of the uterus, very well represents retroversion occurring in the fourth month of pregnancy.

of the sound, since the posterior wall of the uterus develops most rapidly during pregnancy. But as it is a rule *never to use the uterine sound until we have assured ourselves that pregnancy does not exist*, we are to assume the existence of pregnancy and wait for future developments, if the rational signs leave the question of pregnancy doubtful. If, however, we find the usual sympathetic symptoms of pregnancy, (especially arrested menstruation and morning sickness,) in the absence of the rational symptoms of retroflexion, (p. 25,) we may generally make a very positive diagnosis between the two conditions now under comparison.

8. Finally, *retroflexion* is distinguished from *retroversion*, with which it has been confounded by so many authors, by the difference in position of the cervix in the two cases, as explained on pages 25 and 27.

II. The diagnosis of *retroversion* (or retroflexion) of the *pregnant* uterus is usually not difficult. It may, however, be mistaken for the following conditions:

1. Mere *retention of the urine* may lead to suspicions of retroversion; but a vaginal examination in that case shows the uterus *in situ.*

2. From *anteflexion* retroflexion is distinguished by the falling of the fundus uteri backward instead of forward.

3. Retroversion may be mistaken for a *pelvic tumor*. But the latter does not so suddenly cause retention of urine, unless so large that it had previously been detected. There, also, the os and cervix uteri are *in situ.*

4. If retroversion were mistaken for *early pregnancy*, or the contrary, it should be remembered that this condition alone does not give the urgent symptoms of retroversion.

5. Retroversion may be mistaken for *extra-uterine pregnancy;* or the reverse. But the former gives the more urgent symptoms, until the parturient efforts commence in the latter; and in the latter a vaginal examination shows that the uterus is not enlarged, nor the cervix displaced.

6. Finally, retroversion during pregnancy is distinguished from retroflexion in this condition by the less urgency of the symptoms of the latter; especially so far as the bladder is concerned; since the cervix is not thrown forward against that organ or the urethra. Retroflexion during pregnancy is also very much rarer than retroversion, as I have already asserted.

Effects and Complications of Retroflexion and Retroversion.—1. Of retroflexion and retroversion of the non-pregnant uterus. The posterior wall of the uterus is always congested in retroflexion of the third de-

gree, as is the anterior in anteflexion. The congestion is sometimes, however, confined to a small extent of surface, presenting a lobulated sensation to the touch. On the other hand, the entire uterus is sometimes engorged. The cervix is often so, and the os open and swollen, and sometimes, also, ulcerated. Hypertrophy of the womb at length may occur, its whole cavity becoming 3½ to even 4 inches long.

Ovarian irritation also accompanies retroflexion of long standing, and ovaritis is a very common complication. Congestion of the ovaries was found in 9 out of 13 cases by Dr. Rigby. The left ovary is more frequently affected; probably from its nearness to the distended rectum, (Simpson.) The ovaries are also frequently drawn downward. Hæmorrhoids is a very common accompaniment of retroflexion in the third degree; resulting from the direct pressure of the fundus uteri upon the anterior wall of the rectum.

Absence of sexual desire is another not uncommon result of retroflexion; as is also sterility. Retroversion of the unimpregnated uterus is a less frequent cause of sterility, however, than retroflexion, as might be expected. A tendency to abortion is also a result of this displacement.

Adhesions of the uterus to the bladder or rectum, or both, are (rarely) met with in retroflexion. Ovarian tumors sometimes occur, also, as a complication.

2. The effects of *retroversion* of the *pregnant* uterus—retention of urine, constipation, and their secondary consequences—have been detailed under the signs of this displacement. Miscarriage is not seldom a result of it; and sometimes its occurrence alone renders the reposition of the uterus possible, whether this results from adhesions or otherwise.

Prognosis of Retroflexion and Retroversion.—In cases of retroflexion and retroversion of the unimpregnated uterus, we can seldom promise a complete cure—*i e.*, a permanent restoration of the uterus to its normal position—within any definite period, or without the use of some intra-uterine support. We may, however, confidently expect to relieve all cases, and to remove the symptoms in most; provided the patient is in circumstances implicitly to comply with our directions. The treatment is, however, more difficult and less certain in its beneficial results than that of prolapsus, unless it be the third degree of the latter.

Our prognosis of a perfect cure should, therefore, be guarded. But if pregnancy supervene a cure may be expected, if appropriate management be resorted to after parturition.

Retroversion in pregnancy is a dangerous condition to both the

fœtus and the mother; and the danger increases the farther gestation is advanced. We may, however, expect to relieve it, and save the patient, at least, if promptly applied to.

The treatment of retroflexion and retroversion will be the subject of the next lecture.

Reports of Surgical Cases. By John O. Bronson, M.D., Professor of Surgery in the New York Preparatory School of Medicine.

No. I.

REPORT OF TWO CASES OF CYSTOTOMY FOR THE REMOVAL OF CALCULI.

Case 1.—Michael E., æt. sixty, consulted me on the 11th of August, 1859, giving the following history: Although a native of Ireland, he had lived many years in this country, and for the past eight years had been employed in the Rubber Factory at Colchester, Conn., in that department known as the "Varnish-Room," in which turpentine is used in great quantity. After working there a few weeks, his urinary apparatus became deranged. In passing, let me say that he was not alone in suffering this derangement, for all who were employed in that department suffered more or less, and sooner or later were obliged to leave, and find other employment. Most who became affected left in a few days, but Mr. E. maintained his place for this long period of eight years, suffering incessantly. During the last two years of his connection with the manufactory his symptoms were much aggravated, and from time to time, at varying intervals, he passed small calculi, each about the size of a sweet pea, of the uric acid variety. His sufferings became so severe that at last he relinquished his business, and came to this city for relief.

His symptoms indicated the existence of calculi. One symptom, however, which is almost always present under such circumstances, was absent. He never experienced a sudden stoppage of the stream during urination. Nevertheless, the existence of calculi was diagnosticated, although he had consulted several who had told him to the contrary, even after sounding. The sound soon confirmed my diagnosis, and an operation proposed and assented to, and the time fixed therefor on the following Monday.

At the appointed time, in the presence of Dr. H. Guernsey, Dr. R. O. Doremus, Dr. W. B. Bibbins, Dr. E. J. Darken, Dr. A. K. Gardner, Dr. B. L. Budd, and a number of my pupils, I proceeded to perform the usual lateral operation, the patient being under the influence of chloroform.

The incisions were made by means of the scalpel and a button-pointed bistoury. Having removed nine calculi, of the average size of a cherry-stone, and become satisfied that the bladder was entirely evacuated of all foreign bodies, a catheter was placed in the wound, and being released from his position, the patient was removed to his bed, and left to rest.

Reaction took place favorably, and the patient, considering his age and impaired condition, which, together, bespoke an unfavorable prognosis, did remarkably well. His general health improved, and the wound healed kindly, though slowly. Urine began to flow by the urethra about the twelfth day, and in the seventh week the urine flowed entirely by the natural way. Everything looked favorable and gratifying. Under the influence of tonics, his system became strengthened, so that he was up and about. An accident occurred at this time, brought about by the foolish persistence of the patient in keeping the window open at the foot of his bed.

He took cold, and pain gradually appeared within the pelvis, which became of the most severe character, accompanied by chills. In a few days after the pain had reached its acme, pus in very large quantity found its way by the urethra and the wound, laying open the wound to the vesical cavity, giving new egress to the urine. An abscess had formed, I believed, in the prostate gland, and now the condition of the patient was worse than at first. All things, however, progressed favorably for about ten days, when a renewal of the symptoms appeared, more particularly in the chills, and in a few days the right testis suppurated, and discharged its contents through an artificial opening. Again quinine, iron, brandy, and a generous diet brought the patient up, and in a few weeks he was able to sit up. The wound closed in so far that the urine flowed by the natural way. In a short time I had the pleasure of discharging him from under my supervision. This was at the end of the sixteenth week.

On the sixteenth of January, 1860, I was sent for, to find the patient in a condition simulating that in which he was at the time of the formation of the abscess of the prostate. Severe perineal pain and marked symptoms of vesical inflammation. The existence of an abscess was evident, and a day or two demonstrated the formation of a fistula in ano; the abscess at this time having formed lower down. The previous tonic course, accompanied with remedies directed to subdue the inflammation of the bladder, was resorted to. His constitution did not respond to the remedies as formerly, but more tardily. But little improvement was shown, save in the fistula, which had so

far closed as to shut off connection with the bowel. At this juncture of affairs, a consultation with Dr. John O'Reilly was had, on the 13th of February, and a change made in the administration of vesical remedies, by giving gin in the form of milk punches. For a few days some improvement was perceptible. In fact, by the first of March the fistula was nearly closed, and the vesical symptoms subsided to a very great extent.

On the fourth of March a renewal of all the symptoms appeared. The right testis again suppurated, and continued, after discharging its contents, to pour forth large quantities of pus. This drain upon his system, and the irritation produced by the vesical pain, the poor man could not long bear. Gradually yielding to the assault, on the 23d of March, 1860, he succumbed, having, for the two days previous, lost all mental and physical power.

Thus ended a case which, at the end of the sixteenth week, was successful, but which, surrounded with the effects of age and poverty, was finally fatal. I say poverty, for the deprivation to which he was subjected thereby had a telling effect on the result.

Case 2.—Lawrence Lannon, æt. fifty-seven, native of Ireland, came under my care on the 14th of April, 1860. For a period of eighteen months he had suffered symptoms of vesical calculus. On the 18th of April, at my clinic at the Preparatory School of Medicine, assisted by my colleague, Dr. C. A. Budd, and in the presence of the class, I operated, as in the previous case, by the lateral mode, with scalpel and bistoury, the patient being under the influence of chloroform. No difficulty was experienced, the bladder being reached readily and speedily. Although the stone gave a sharp click when struck by the sound, when reached it was found to be of much softer material than was supposed. The stone was of the phosphatic variety, covered by a thin, more solid envelope, which accounted for the sound given upon concussion with the steel. The concretion was of the size of a hen's egg, and was broken in several pieces during the extraction. The bladder was thoroughly cleansed, the patient aroused from his anæsthetic state, and being placed in a coach, was carried to quarters prepared for him about half a mile distant. He was placed in bed, and left to rest, without a catheter in the wound. It was found necessary to give most generous diet and strong tonic treatment. On the fourth day after the operation, erysipelas appeared in the wounded parts, which, however, was quickly subdued by astringent lotions and a continuance of the quinine, &c.

On the 9th of May, just three weeks from the operation, the pa-

tient found it necessary to go into the country, or, rather, found it quite impossible to remain in town, and although unwilling, I was obliged to submit, and allow his departure to New Jersey, a short distance from Bull's Ferry. On the 30th of May, just six weeks from the operation, and three weeks after he left my care, he presented himself cured, the urine flowing entirely by the urethra, and his general condition much improved. This result was highly gratifying, considering the unusual circumstances in which he was placed.

Abstracts and Translations from Foreign Journals.—Prepared expressly for the MONTHLY.

THE TRINITY OF CHARLATANISM.

The medical profession of Portugal is taking high ground on the subject of medical charlatanism. The Duke de Saldanha had petitioned the young king in favor of pseudo-medical practitioners, and was met valiantly by Prof. Gomes, physician to the king. Prof. Thos. de Carvalho, in opening the session of the Medical School of Lisbon, selected as his subject The Trinity of Charlatanism—Paracelsus, Mesmer, and Hahnemann.

After an ingenious analysis of the supernatural doctrines of the notorious illuminatus, he says: Paracelsus died because he was human; but Azoth, his familiar demon, the author of his enchantment, did not die, because he was a spirit. But what became of him? Whither did he transmigrate? First, into the hands of Thurneyser, who concealed him in a crystal vase, in the form of a scorpion. But what glorious sword, what crystal vase conceals him now? Who is the modern thaumaturgist that can boast of possession of this precious gift? At the end of the eighteenth century, the hidden principles of Paracelsus found an enthusiastic propagandiste in Mesmer, whose doctrines are still the law of modern magnetizers. The experiments of Volta, the immortal discovery of Galvani, had exalted the imagination. Mesmer assumed then the form of the famous visionary, and, calling the venerable Azoth to aid him in his prestidigitary mystifications, announced the discovery of a new human fluid, analogous to that of Volta and Galvani, possessing wonderful properties and effects, acting at a distance through the agency both of light and sound. The sidereal bodies of Paracelsus barely change their names in the new cabala; the new baptism did not remove the original stain.

Mesmer began his operations at Vienna; but the number of the

incredulous who had known the simple student was too large, and the theatre too contracted for his magnetic prestidigitations. He traveled, and came to Paris. The soil was fertile, and the moment propitious for the miracle-worker. He taught the doctrine to some spirits enthusiastic with the occult sciences, and pretended, in his character of physician, to reveal all diseases, and to cure them by the influence of fluids that he had subjected to his all-powerful will.

The curative art, he said, will reach the utmost limits of perfection through animal magnetism. It should, then, be substituted for the science that had cost two thousand years of consecutive efforts, repeated observations and painful experiences, and which should be exposed to an inexorable ostracism. All that had exercised the greatest intellects, that the greatest spirits of all time had irradiated on the pages of history, should be condemned, as error and mental aberration. We do not know but that Mesmer, like Paracelsus, burned the books of ancient science, so that he could better demonstrate the uselessness of the observations they contained. In this point of view, magnetism is one of the grandest pieces of bold effrontery in modern charlatanism.

The orator described the practices of Mesmer, and his different methods of exalting the imagination of the credulous. He approximated, in the extravagant luxury of his clothing, the habits of Paracelsus, who was accustomed to array himself in scarlet cloth. The indecent and scandalous scenes which resulted from the magnetic operations of the impudent charlatan may also have approximated those of Paracelsus. But Mesmer repeated, mentally, the motto of the Garter : *Honi soit qui mal y pense.*

Despite the high protection of Marie-Antoinette and d'Eslon, public indignation was so excited against the audacious magnetizer, that he was forced to quit Paris, leaving to his disciples the continuation of his work. Like the adepts of Paracelsus, who practiced secretly his occult medicine, these new energumens undertook to convert the world to the magic of the new illuminati. What is left, at present, simply serves to divert the public at their marvelous *seances*, or in the theatres, by prestidigitation, attracting the parterre with the phenomena of second sight. Yet Herrman, in his exhibitions before the Sultan and the Emperor of Russia, was superior to all the magnetizers in the world.

The invention of Mesmer, although provoked by the discoveries of Volta and Galvani, had its root in the doctrines of Paracelsus. The sidereal bodies of the illuminatus of Einsiedeln possessed the same

properties as the magnetic fluid, and produced like effects. Concentration of the will was sufficient for Mesmer in the development of the astonishing phenomena which were observed in his cabinet, just as inward contemplation, in the silence of the senses and inactivity of the faculties, sufficed to give full plenitude of action to the sidereal bodies. By their wonderful and supernatural influence, the stars were not only in relation with sublunary creatures, but, through their agency, the past would be divulged, the present made known, and the future revealed. Magnetism is not less worthy of admiration. Somnambulists understand the dead languages which they have never learned; they describe, as minutely as the most skillful and wise anatomist, the human organization; they see what is passing at many leagues distant, and divine, as the first sorcerer, future events. The fluid may be reflected from a mirror or any other substance, and all animate and inanimate bodies—a tree or a stone—are susceptible of developing it through the will of the magnetizer, and communicating its influence to bodies which are brought into contact with it. The fluid fills and controls the whole universe, just as the Paracelsian bodies.

Contemporaneous with Mesmer, born also in Germany, the country of mysticism, a physician who failed to acquire a fortune by the translation of some distinguished works, and not seeing patients flocking to his office, desired to erect a new doctrine on the ruins of the old. He denied the dogmas which were established for twenty centuries, as the best means of obtaining notoriety, and even established his new system on this negation.

The two absurd principles, *similia similibus curantur*, and the increased power of drugs in direct proportion with the attenuation of the dose, necessarily involved mysterious consequences and assimilated madness. The clear, manifest, evident, positive action of medicines, confirmed by thousands of experiments, and certified by so many wise physicians who had ennobled and illustrated traditional medicine, this action was contested, denied, and substituted by a secret influence arising from homœopathic preparation. Liquids are diluted until they remain concealed under the most subtle analysis; solids are reduced and attenuated until they are imponderable and unrecognizable; yet, with each dilution, with each attenuation of the substance, its therapeutic action becomes more active, energetic, and efficacious. The more the substance disappears, the more the activity it possesses is developed, grows, and multiplies its effects. If it were possible to conceive of total, complete annihilation of matter, then the active power it contained would arise to its maximum. Without renewing the trial of

homœopathy, which has been solemnly tried and condemned, it may be seen what a negation it is of *physics*, as well as of *medicine*.

Like Paracelsus and Mesmer, Hahnemann traveled and came to Paris, the great centre of intelligence, the luminous focus of the arts and sciences, which seems destined both to consecrate great geniuses, the exceptional spirits that preside over the progress of civilization, and to celebrate the ephemeral reign of every form of charlatanism.

Traditional medicine saw the surging of the new error, heard the murmurs against itself; judged it, and suffered it to pass. * * * The proofs that the pseudo-doctrine is derived from the cabala, and has some points of contact with mesmerism, are furnished by the Organon—the Gospel of Homœopathy. Hahnemann pretended that he could so isolate the medicative virtues of medical substances, that he had a glimpse of the possibility of suppressing all medicines and substituting for them the mesmeric action of the strong will of a healthy, robust man, producing in the sick symptoms similar to the disease from which they were suffering.

The orator concludes as follows: " Charlatanism has always resulted from madness or dishonesty. Let us pity the fools and punish the rogues. We should be inexorable on this point. Intelligence is granted in different proportions, and all eyes cannot behold the luminous splendor of science; but honesty is one and the same with all. * * We notice, with pain, some degenerate students of our schools, forgetful of their instructions and the example furnished by their teachers, employing the diploma they have received to cover over frauds and scientific trickery. Our profession excludes us from any intercourse with these. The practice of medicine is a *priesthood;* mere money-changers are not received in its temples. * * * The life of a physician is a continual trial. He has not a moment at his command, because he is devoted to the relief and consolation of his race. He should hoard up treasures of charity, resignation, and patience, to dispense them prodigally. If he passes years in acquiring a knowledge of a laborious and often repugnant science; if he consumes his youth in the schools, and his back over books; if he passes days and nights at the bedside and in anatomical amphitheatres, he owes all the fruit of these painful and conscientious labors to the humanity to which he is sacrificed. If this vocation does not please him, rather let him retire, than prostitute himself in the dark regions of charlatanism."

These are brave words from our Portuguese brother.—*L' Union Médicale.*

L. H. S.

HYPNOTISM.

This novelty—last of those which have served to occupy the attention of the versatile Parisian—proves to be but a reproduction of the quasi-catalepsy or anæsthesia of mesmeric times. We recollect the very singular book of Dr. Esdaille on the effects of mesmerism in India, in which he described a number of capital and bloody operations performed on patients, under the so-called mesmeric influence, without the slightest manifestation of pain. We were satisfied then that the proper way to meet his theory was *not* by discountenancing these cases. In what is called Hypnotism, we have a resurrection of these phenomena divested of any troublesome theory. Dr. Vigla, in the *Journal de Pharmacie et de Chemie*, gives a short account of the present knowledge of this subject. The process by which the person is thrown in the somnambulic condition is as follows: a bright object (a silver lancet-case, for example,) is held between the thumb and fingers of the left hand, at a distance from 20 to 40 centimetres (8 to 16 inches) from the eyes, so that the eyes and eyelids must be somewhat strained in order to see it. The eyes and the attention of the patient are to be solely fixed on this object. In this way Azam, (Bordeaux,) Broca, Follin, Velpeau, and other surgeons, have experimented, with the view of testing the phenomena produced by hypnotism. As to the best mode of operating, Azam thus writes in the *Gazette des Hôpitaux:*

The patient should be placed on a low chair, the head thrown back. All noise should be avoided, as well as any preoccupation of the mind. It is not to be doubted but the presence of many assistants and the exaggerated fears as to a painful operation are the worst conditions for success. The body being placed in a comfortable position, and the limbs relaxed, I place a bright object before the eyes, in such a position as to produce a kind of converging strabismus of such a character that the axes of the eyes may intersect, so to speak, the arch of the eyebrows, and yet the object be seen distinctly. The *continued* convergence of the eyes is an indispensable condition. After a short time, varying from one minute and a half to four or five minutes, the pupils, which at first were contracted, dilate or contract by a species of oscillatory movement; the countenance loses all expression, the eyelids wink, the respiration is accelerated, and the patient exhibits indications, as it were, of involuntary deglutition. The pulse is then reduced, the eyes generally closed, and now catalepsy is established. The anæsthetic period commences here; but it must be understood that this has not been produced in all those on whom the

experiments have been performed—a large number are refractory to hypnotism. Females, particularly the young and susceptible, are the most readily placed in this condition, although it must also be stated that Azam has succeeded in hypnotizing a female, sixty-three years old.

Dr. Braid, who has employed this method in affections the most dissimilar, in which he pretends that he was successful, endeavored to make it useful as a means of moderating or even suppressing pain in surgical operations. He relates that teeth were extracted without pain in six cases that were hypnotized; that he opened an abscess for a lady, under this influence, without the least expression of pain; and that he performed tenotomy in an adult case without any indication of suffering. Results so satisfactory are of a character to encourage surgeons. An operation (the opening of an abscess) was performed by Follin, with but a slight cry from the patient.

Such is hypnotism. Can its scientific destiny be predicted? The first difficulty consists in its applicability to only a small number of individuals, and even in those the anæsthetic stage of hypnotism is not always attained; and what is of still greater importance, according to Azam, it is liable to bring on attacks in cases of epileptic or hysterical persons. What remains, then, to be said of its application as an anæsthetic method in surgical operations? Nothing more than can be said of magnetism, (which is very little,) and it may be, indeed, less. Hypnotism will serve to divert the Parisian public, to teach them how the monks of Mount Athos procured cataleptic ecstasies by gazing on the umbilicus, to recall the famous tub of Mesmer, the mirror of Cagliostro, and other facts, more or less marvelous, which seem to belong to the same order of experimentation. It will, however, be advantageous to examine by clear sunlight the facts which were attributed, by ignorance or jugglery, to a mysterious, *soi-disant* magnetic influence, and a serious investigation by physiologists may thus be provoked of these singular phenomena.—*Jour. de Pharmacie, &c.* L. H. S.

M. Guerry, (from the *Gazette Médicale de Paris,*) in a note to the Academy of Sciences, directs attention to the fact that more than two centuries since the effects of hypnotism were called the phenomena of *actinobolism*, or *irradiation*. The following passage clearly proves this statement; it will be found in Father Kircher's ARS MAGNA LUCIS ET UMBRÆ, Rome, 1646:

Experimentum Mirabile.—Gallinam pedibus vinctam in pavimentum quodpiam depone: quæ primo quidem se captivam sentiens, alarum succussione, totius corporis motu, vincula sibi injecta excutere omnibus modis laborabit; sed irrito tandem conatu de evasione, veluti desperabunda, ad quietem se componens victoris de arbitrio sistet. Quieta

igitur sic manente gallina, ab oculo ejusdem in ipso pavimento lineam rectam creta vel alio quovis coloris generequæ chordæ figuram referat duces. Deinde eam compedibus solutam relinques. Dico quod gallina, quantum vis vinculis soluta, *minime tamen avolatura sit*, etiam si ad avolandum instimulaveris, (p. 154, 155.)

This same experiment is also noticed by Daniel Schwentner, of Nuremberg, in his *Deliciæ Physico-Mathematicæ.*

Dr. E. Rossi, private physician to Prince Halim Pacha, speaks of Hypnotism, as practiced in Egypt. In this country, sacred to tradition, where what is done to-day is the same that has been done for forty ages, there is a class of persons whose profession is that of *Mandeb.* The effects produced, despised at present as charlatanism, are the same as those described by Dr. Braid, or rather hypnotism, in their hands, constitute the first link in the chain of phenomena which closes with magnetic somnambulism. Their method of operation is as follows: they generally use a perfectly white plate of the best earthenware. This answers to Braid's luminous object. In the middle of the plate they make, with pen and ink, two triangles intersecting each other, and fill the space inclosed by this geometric figure with cabalistic words; this is done probably so as to concentrate the attention on one spot. Then, to increase the brightness of the surface of the plate, they pour on it a small quantity of oil. They generally select a young subject for their experiments, and cause him to look fixedly on the centre of the two triangles. In four or five minutes the following effects are noticed: he begins to see a black point in the middle of the plate, which soon enlarges, changes its form, and is transformed into different appearances, which flit before the patient. At this stage of the process, the subject often acquires a somnambulistic lucidity as extraordinary as that of those who have been magnetized.

There are, however, some of the *Cheks*, who, in a more simple manner, without resorting to geometric figures and cabalistic words, produce quite perfectly hypnotism and somnambulism, after the manner of Braid, by simply fixing the gaze of the subject on a glass bowl; and as they do not possess a Charrière to make fine apparatus, they employ one of the bowls which answer for lamps, oil being poured in them. * * * I wish to claim for antiquity priority of discovery of hypnotism.

Giraud Teulon, in his review of Figuier's History of the Marvelous, mentions the Omphalopsychists of India, as also using hypnotism; the ecstasy was produced by gazing intently on the navel. The effects of fixedness of gaze will explain many of the wonderful phenomena which

are read with praiseworthy incredulity by the present generation, as recorded on the pages of history. L. H. S.

CATALEPTIC SLEEP IN FOWLS.

Hypnotism is the hobby which the French journals are riding with the greatest possible delight. Dr. Michea is not satisfied with the experiments of Azam and Broca on man, but has carried on a series of experiments on cocks and hens. The experiments are not new, even in this country, although the dignified name of hypnotism has never been applied to the agency inducing the cataleptic condition. The mode of operating consists simply in placing the fowl upon a board, (Michea used one of a *green* color,) pushing the head down so that the end of the bill should touch the board, then drawing a line with some Spanish whiting from the end of the bill. "The fowl, which before the operation made resistance with its feet, and moved its eyes freely, at the end of two minutes began to have a fixedness of gaze, to wink its eyes, to open its bill slightly; then gradually sinking down, it fell on its right side. Its head was then stuck with a needle, as well as the body and feet, but there was no reactionary movement, and not the slightest cry. The head was turned to the right and to the left; the neck, which had sunken between its wings, was lengthened, and each part retained the position given it. . . . . At the end of three minutes the fowl spontaneously broke out of its somnolence." The author finds nearly similar results in every case.

The question arises, Why is it that hypnotism is produced in man when the eyes are fixed on some brilliant object, while in animals, especially the Gallinaceæ, the result is obtained when the head is placed in the axis of a line drawn with Spanish whiting. The first idea which presents itself to the mind is that of interference from molestation of vision; and vertigo has been regarded as the point of departure of all the phenomena constituting hypnotism, since it is really so closely connected with spontaneous catalepsy as to constitute often the initial phenomenon. According to Lamettrie, the vertigo, so frequent in persons who amuse themselves in turning round or dancing in a circle, is very different from that to which one is subject on looking at the earth from a very high position. In the second form of vertigo, the fear of falling plays a very important part, while all such psychical element would be absent in the first. Might not fear have some agency in the sleep provoked in cocks and hens? The line drawn on their bills and prolonged on the ground, could it not have

the terrifying effect on these animals that the *eyes* of others possess? For, to say nothing of the stupor that the gaze of a dog produces on the partridge, or that of the toad on the agile weasel, it is asserted that ophidians, from the enormous serpents of America down to the vipers, paralyze batrachians and certain birds; that, by directing their shining eyes on the frog or the nightingale, for example, they plunge these into the most complete state of muscular relaxation; that they fascinate the singing-bird, so that it is made to descend from branch to branch, and finally fall on the ground. However this may be, we know positively that strabismus is indispensable to the production of hypnotism in man, and that it does not seem to be necessary for the manifestation of the same phenomena in animals, at least in the gallinaceæ.

Michea draws the following conclusions:

1. Hypnotism produced in cocks and hens by the bizarre and quasi-cabalistic method that Dr. Braid borrows from the jugglery of Bohemians and mountebanks, was completely manifested in the majority, and incompletely in the generality of the experiments.

2. In the cases of complete hypnotism, the insensibility to punctures and the catalepsy are as evident as in hypnotism produced in man by gazing fixedly on a brilliant object.

3. The catalepsy is very decided in the neck and head; it is less in the feet, and almost nothing in the wings.

4. The slightest puff on the eyes ends instantly, and, as though it were by enchantment, the cataleptic sleep.—*Gazette des Hôpitaux.*

L. H. S.

DIPHTHERIA AND ITS TREATMENT.

The French journals continue to furnish articles on this disease, which has become so fearfully interesting to the profession. We are satisfied that the same disease is not always described, although the same name is used; still, much that is interesting and something that is valuable may be gleaned from the journals. We make a few extracts, that our readers may see how variant the opinions of medical men are on this subject. First, however, we shall present a condensation of some facts connected with the history of the disease from Dr. Michel Peter, of the *Hôpital des Enfants* at Paris: "Diphtheritic affections, more frequent in 1858 than in 1857, have increased in frequency in 1860. A cold and damp season, with abrupt changes of temperature, has increased the number of diphtheritic affections. . . Tracheotomy has furnished, in both sexes, a little more than one-fourth cures, (1 to 3 in boys, and 1 to 3.7 in girls.) The operation

has been constantly unfortunate when practiced at the age of 2 or 2½ years. It rarely affords success at from 3 to 3½ years, but furnishes successful results very often at from 4 to 6 years in girls, and 4–5 years in boys. . . . Diphtheritis kills more by poisoning than suffocation."

Non-inoculability of the Disease.—Dr. Peter has made some bold, and we must say silly, experiments on this subject, by placing the diphtheritic matter on the surface of one of his mucous membranes, or inserting it under the epithelium. In November, 1858, having practiced tracheotomy on a child affected with this disease, a quantity of diphtheritic matter, partly membranous and partly liquid, was thrown on the whole ball of the left eye, a portion of the liquid getting between the lower lid and the eye. He did not remove it immediately by washing, as he wished to test the fact of contagion by immediate contact. Twenty-four hours afterwards no alteration was noticed in the eye, and no inconvenience was experienced. In December, 1858, Dr. Peter took some diphtheritic matter obtained in a case where tracheotomy had been performed by Coulon, and inserted it, with a lancet, on the median line and the lateral portions of the mucous membrane of the lower lip. The first point bled for a few moments, but 24 hours after the inoculation nothing was appreciable, save a slight ecchymotic projection in the middle of the median puncture. In January, 1859, he took some matter obtained from a girl 11 years old, and charging a piece of charpie with it, he coated the tonsils, the palate, and the posterior part of the pharynx with the same. Slight nausea was produced, but the diphtheritic matter was not ejected. He abstained from drinking, so as not to dilute the morbid product. No evil effect resulted. These experiments, however, only prove Trousseau's words: "It is not to be concluded that diphtheria is not transmissible, but only that inoculation is not the means of transmission."

Treatment by Perchloride of Iron.—This treatment, instituted by Dr. Aubrun, is warmly commended by Dr. Duliquier. "From 20 to 25 drops of solution of perchloride of iron is poured into a glass, which is then filled with cold water. The patient is to take a swallow every five, ten, or fifteen minutes—the inky taste is best removed by a few swallows of water. This treatment should be continued for two or three days. During the treatment care must be taken to supply food; milk may be employed, soups, or even meat, if they can masticate it, and also a little pure wine."

Treatment by Iodine.—Dr. Charnaux has only had five deaths in

thirty cases. He covers the parts affected with tincture of iodine, repeating the application hourly. This removes generally the membrane in a few hours, when he alternates the iodine application with a chlorate of potassa gargle, made as follows:

Potassa Chlorat.,	6 grammes.
Aquæ,	180 "

A strong decoction of cinchona is given internally, broths freely, and whatever the appetite may demand.

Treatment by Ice.—Blanc, of Strasburg, employs gargles of cold water 20 to 30 times an hour. Dr. Grand-Boulogne, in Havana, practiced the following plan: The affected parts were cauterized with a mixture of honey and chlorhydric acid applied on lint, and pieces of ice were kept constantly in the mouths of the sick. The sensation of suffocation quickly passes away, and general relief is experienced. From a number of cases treated in this way, he arrives at the two following conclusions: 1. The ice instantly checks the diphtheritic exudation by a local and primitive action; 2. By a secondary or reflex action, it reacts on the nervous system, restoring the whole system to the normal physiological conditions, which are consequently incompatible with the formation of the morbid product constituting diphtheria.

The error underlying all these suggestions is the almost absolute attention paid to the local affection, ignoring, as it were, that which must constitute the most important characteristic of the disease, the poison which is acting on the blood, and thus undermining the very source of life. Nevertheless, some attention must be paid to the local affection, and it is well to examine the different methods proposed by those who have had the best opportunities for observing the disease. All cases of toxæmia are involved in obscurity—each contribution towards the removal of the veil must be hailed as acceptable by the true student of nature. L. H. S.

MYOLETHE—MUSCULAR FORGETFULNESS.

Baron Heurteloup, in the first chapter of his Physiology, thus speaks of a peculiar condition of the muscular system, which produces certain unexplained phenomena: "The muscular system is under the influence of the cerebro-spinal apparatus, and thence contracts in accordance with, or without, volition. Whilst the relations between these two systems of organs are normal, so that nothing interferes with the influence of the brain on the muscles, life proceeds on its way with certainty. But if anything should subvert the tranquil influence of one

of these systems on the other; if the brain, which controls muscular actions, lose, for a longer or shorter time, its freedom of action, the muscular system will be affected by such a condition; its contractions will cease for a time; there will be a sudden interruption of a movement commenced, or a sudden passage from one position to another. Heurteloup calls all the phenomena which result from this interruption, from this suspension of the regulative action of the muscles, by the name of *myolêthes*, from *μυς*, *muscle*, and *ληθη*, *forgetfulness*, since they are the result of momentary forgetfulness of the brain to command the muscles to contract. This forgetfulness of the brain is occasioned by a number of causes: intellectual tension, passion, astonishment, fear, rage, chagrin, joy; in fine, by everything calculated to attract the attention strongly.

Entering upon the details, Heurteloup reviews the different systems which constitute our organism; at first the external muscular system, where myolethe is an every-day incident, showing itself in the most familiar acts of life. If we open our mouths when we listen attentively, it is not, as the transcendental physiologists (Richerand among others) had the courage to say, to hear better by allowing the sound direct access to the Eustachian tube; but simply because the jaw falls, and the jaw falls because the brain, being preoccupied, forgets to keep it up. He explains in the same way the popular dictum, on receiving a sudden shock, "*I became powerless*," the helplessness that manifests itself when we are on elevated positions, or by the edge of an abyss; and a host of phenomena which result from the arrest of muscular contraction in consequence of the preoccupation of the brain.

After these external, and somewhat material, proofs of myolethe, Heurteloup studies the more hidden manifestations of this phenomenon in the most delicate organs employed in nutrition, respiration, circulation, the formation of the voice, the use of the different senses, the urinary or generative function, &c. The very simple principle of myolethe furnishes the key or explanation, easy, palpable, and true, of a host of phenomena, whose cause, up to the present time, has remained unperceived or misapprehended, enveloped in impenetrable mystery. It is thus known why we stammer, why fright seems to fasten the feet to the floor, &c. We have the secret of hypochondria, nightmare, lypomania, hallucinations, &c. The following propositions furnish a useful *résumé* of the conclusions arrived at by Heurteloup: 1. If the functions of the organism are executed by the influence of the brain on the contraction of the muscles, these functions are arrested as soon as the preoccupied brain no longer controls these contractions; 2. The

arrest of these contractions is quickly or slowly effected, according to the nature of the cause; it is also ephemeral or permanent: when ephemeral, it may produce serious disorders, according to the functions it intermits; when permanent, it produces chronic diseases or impotencies of organs, of a dangerous character, in proportion with their nearer relation to the brain; 3. A thorough study of myolethe will lead to useful conclusions in natural physiology, hygiene and therapeutics; it seems to be the key to most facts which have heretofore appeared to be at variance with the laws governing the economy.—*Cosmos, Jan.* 27, 1860. L. H. S.

POISONING BY CAMPHOR USED TO PRODUCE ABORTION.

In the number for April, 1859, (p. 290,) we furnished our readers an account of a case of poisoning by camphor, in a man who had employed it in the treatment of urethritis. We now present the report of a case of poisoning from the same agent, resulting in death.

"A woman, aged thirty-six, of a delicate, nervous temperament, the mother of five children, being four months gone in pregnancy, and fearing the effects of this pregnancy, took, on the advice of one of her neighbors, 12 grammes of camphor, at one dose, dissolved in brandy. During the first hours after the dose she only experienced phenomena of intoxication, headache, redness of the face, and a burning sensation about the stomach; eight hours afterwards she began to experience a pain, somewhat severe at first, but which became towards mid-day very intense, occupying the epigastric region, and thence radiating to the loins, and over the whole of the abdomen. There was tenesmus for some hours; heat, and painful sensations recurred at intervals. During the evening and following night there was great anxiety—vomitings, at first the ingesta, then bilious, supervened, and were repeated occasionally; the abdomen became tumefied, painful, and very sensitive under the slightest palpitation; uterine pains increased in intensity.

On the third day a physician was called, who administered some remedies, although without relief. Dr. Fenerly, called on the ninth day, found the features changed, face pale, ghastly, and livid; cheeks hollow; eyes sunken, and tarnished; skin cold, and void of feeling; pulse small, and threadlike; movements of the heart weak, and slow; respiration painful, and voice very weak. She was plunged in a comatose condition. The whole abdomen, especially the epigastrium, was very painful, and incapable of bearing the slightest pressure. In a few hours violent and painful cramps were experienced in the extremities; urine was suppressed for twenty-four hours, and percussion on

the vesical region furnished no indications of the presence of urine in the bladder. There was a slight flow of blood through the vagina, and the *touch* showed that the orifice of the neck of the uterus was slightly open, and very warm. The patient lived three days in this condition, and then died, having had a miscarriage on the evening of her death.—*Bulletin de Thérapeutique.* L. H. S.

CHEMICAL INVESTIGATIONS ON THE ROOT OF THE KAWA, OR AVA.

Gobley has directed the attention of the Pharmaceutical Society of Paris to a species of pepper, called, by Forster, Piper methysticum. It is produced by a vegetable well known, in almost all the isles of the Southern Ocean, under the name of kawa, or ava. Its root, fresh or dry, has been employed, from time immemorial, in the preparation of a drink, which, before the establishment of intimate relations between the peoples of Oceanica and Europe, constituted the favorite beverage of these islands. Being macerated in water, it furnishes, indeed, a liquid which the people of these lands drink with pleasure, because it plunges them into a species of drunkenness or excitement quite peculiar. This root, somewhat large in size, has been described by Forster and Lesson: it is ligneous, light, of a grayish color on the exterior, white, and of a loose, spongy tissue within; its fibres radiate from the centre to the circumference, as is the case with the monocotyledons. Its odor and taste are slightly aromatic; when chewed, it is slightly acrid, astringent, and sialogogue.

Gobley's examination of some specimens, brought home by Dr. O'Rocke, is as follows:

Water,	15
Cellulose,	26
Starch,	49
Methysticine,	1
Acrid and aromatic resin,	2
Extractive matter and gum,	3
Chloride of potassium,	1
Magnesia, silica, alumina, oxide of iron, &c.,	3
	100

The kawa approximates, as will be seen, to pepper in its chemical composition, although it differs in many respects, and, among others, in the special properties belonging to the peculiar principle it contains. It possesses a decided therapeutic action, being one of the most powerful sudorifics known. It also exercises an influence in the cure of catarrhal affections and blennorrhagia.—*Bullet. Gén. de Téhrap.*

L. H. S.

COMPOSITION AND PREPARATION OF URATE OF QUININE.

An attempt has been made, by experiments somewhat numerous, to establish the superiority of urate of quinine over the sulphate in the treatment of certain refractory intermittent fevers and different other periodic affections. Although we consider the question as far from being settled, yet we shall furnish the method of preparation of this new salt.

Urate of quinia *(Bulletin Général. de Thérap.)* results from the combinations of ten parts, by weight, of crude quinine with twenty parts of pure crystallized uric acid. Five hundred grammes of distilled water are placed in a beaker on the fire; when the water boils, the crude commercial quinine is added; the ebullition is kept up for ten minutes, and then the pure crystallized uric acid is added in small quantities, taking care to stir the mixture with a spatula; this mixture is kept in a state of ebullition for one hour. Water is added from time to time, to preserve the volume of the mixture; it is afterwards filtered, and the preparation is decanted, and the *marc* is treated again with distilled water, in quantity equal to that first employed. This is caused to boil for twenty minutes, passed through the same filter—the filtrates are united and evaporated to perfect dryness over a gentle heat. There is thus obtained a salt of a fine yellow color, sometimes amorphous, oftener crystallized in very brilliant spangles. Urate of quinine is soluble in boiling, or simply warm, distilled water; also soluble, although less readily, in cold distilled water.

Peraire, the discoverer of this new preparation, has taken pains to vary the formulæ containing urate of quinine, so as to furnish medicinal forms adapted to the most ordinary menstrua. The following are some of the principal formulæ:

For *Pills.*—Quiniæ Urat., q. s.
Pulv. glycyr., q. s.
Fiat massa.—These are to weigh from 5 to 16 centigrammes.

For *Potion.*—℞.—Aquæ gummat., 100 grammes.
Quiniæ urat., 30 centigrammes.
Syrup. (Orgeat,) 30 grammes.

For *Alcoholate.*—℞.—Alcohol, 4 grammes.
Quiniæ urat., 60 centigrammes.
Tinctur. anisi, 4 gtt.
Dose: Ten drops through the day, on sugar.

For *Wine.*—℞.—Vin. alb., 125 grammes.
Quin. urat., 1 gramme.

L. H. S.

FISSURE OF ANUS.

Gaussail, in the *Journal of Medicine*, published at Toulouse, (Feb., 1860,) proposes the following pills, as an adjuvant to the topical treatment of fissure of anus, with the view of rendering the stools less painful. They were used successfully in one case which had persisted fifteen months, but yielded absolutely in twenty days to treatment.

R.—Pulv. aloes,		
" gambogiæ, ää,	grammes	4.
Antimon. et Potass. tart.,	"	0.05.
Ol. anisi,	"	2.00.
Syr. Simp.,	q. s.	

Fiat massa.—Pills are to be formed weighing just twenty centigrammes. One of these pills is to be taken every evening.

HOARSENESS OF SINGERS, PRODUCED BY FATIGUE, ETC.

The first tenor of the continental opera is accustomed to employ as a remedy for the annoying affection the following treatment: Take, for five or six days, twice a day, as a beverage, from five to six drops of nitric acid in a glass of sugar-water. In case the system should become so accustomed to this medicament that its efficaciousness is diminished, the dose should be increased to ten or eleven drops.

L. H. S.

EFFECTS OF CONICAL PROJECTILES.

Bertherand has been investigating the effects of the new conical ball used in the modern musket, and presents the following as the results of his investigation:

" 1. The point of the conical projectile striking a bone at a spongy part, (the end,) is likely to penetrate without shivering it; but the danger is great when it comes in contact with a compact portion, (diaphysis,) in consequence of the number and size of the fragments it produces. 2. The helicoidal movement of the conical ball tends less to the production of reflection from points of resistance, than the form and conditions of progression of the spheroid. 3. *A priori*, the hole which the conical ball makes should be more contracted. Apart from this difference, which is not very sensible, there is another advantage, in the production of less contusion around the hole. As regards the hole made in escaping, the new projectile affords the worst injury. In fact, the resistance it receives in its passage tends to turn its course, so that on reaching the integument as it escapes, its sharp point is no longer in advance; but a lateral or oblique position being assumed, a large opening is made."—*Gaz. Méd. de l'Algerie.* L. H. S.

INFLUENCE OF HONEY ON HEALTH, BY DR. BUZAIRIES.

The ancient sages considered honey as a sovereign and universal remedy, and the old attributed their great age to its use as an article of food. Among these, may be mentioned Democritus, of Abdera, who reached the age of one hundred and nine years; Anacreon, one hundred and fifteen; Pollio Romulus, over one hundred, &c. Hippocrates, the most celebrated physician of antiquity, recommended honey as a means of prolonging life, and himself attained a very advanced age. The inhabitants of ancient Greece sweetened their wines with honey, and prepared with it a very common beverage known as *mulsum.* Anacreon manifested a well-marked preference for this beverage, and while drinking it he composed the most joyous songs that have come down to us. The wrestlers and athletæ of Greece and Rome never entered the arena without having first eaten a certain quantity of honey. Pythagoras and Democritus lived, we are told, on bread and honey, in the full belief that it was an infallible means of prolonging life and preserving the mind in its full vigor.—*Jour. de Chim. Med.*

S.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. GIBBS, M.D., Frewsburg, N. Y.

Pathology of Tubercle.—In the *American Journal of Medical Sciences* for April, Dr. C. Ellis, of Boston, has an essay upon *Tubercle.* The essay received the Boylston prize, and though the opinions of the author are none of them novel, yet the essay is not without its merit. We shall make a quotation or two, which will embody the most important ideas. Of *tubercle* he says: "It is not a specific exudation. It does not exist as such in the blood. The yellow variety is always the result of metamorphosis—of degeneration." It is altogether probable that it is owing to a "degraded condition of the nutritive material," which differs from that furnished under ordinary circumstances, "not in kind, but in degree of vitality or capacity for organization."

In regard to its connection with inflammation, he says: "Tubercle makes its appearance sometimes with, sometimes without symptoms of inflammation, and, certainly, the recent granulations, in most cases, show no signs of an inflammatory origin: the tissue in their neigh-

borhood is remarkably healthy. If, therefore, they generally or often exist without apparent inflammation, the presence of the latter should rather be regarded as a consequence, and not a cause." We quote the above opinions with pleasure, as they conform with our own idea, expressed several years since.

Those of our readers who have been in receipt of the MONTHLY for the last five years, may remember some remarks of ours in the January issue of this journal for 1856. Speaking of meningeal tuberculosis, we held the following language: "Many have supposed that meningeal inflammation commenced anterior to the deposition of meningeal tubercle. Such suppose the granular deposition to be nothing more nor less than the product of inflammation, and, consequently, tuberculosis the sequence of an inflammatory cause. Some of the first names in the profession, in the full light of our present pathology, have maintained this opinion, of whom may be mentioned Broussais, Alison, Andral, Rainhart, Rokitansky, Gross, &c. Williams, too, claims that tubercles are frequently the product of inflammation. The subject is of the first importance, and I propose here a few arguments in disproof of the opinion of the above-mentioned pathologists. Perhaps there is no fact better established in pathology than that tubercles exist in numberless cases without any evidences of inflammation, either by symptoms, or as shown by anatomical examination. If this be so, then inflammation is not necessary to the production of tubercle; and when it exists in connection with such deposits, it is probable that it is a superinduced consequence, and not a pre-existing cause. It is admitted that tubercles may occur in an organ simultaneous with, or subsequent to, inflammation in the same organ; but even then there is no evidence that there is an existing relation of cause and effect; but it is probable that their coexistence is accidental, or, rather, the subjoined tubercles are an independent coincidence. It is possible that, in persons of a scrofulous diathesis, inflammation may *hasten* the deposition of tubercles; but this is far from justifying the conclusion that such deposits are the *products* of inflammation."

Bearing upon some other points of Dr. Ellis' paper, we should be happy to quote similar ideas from our paper referred to, but our space will not justify great extension. We will, however, make one other quotation. Dr. Ellis states his conclusions in regard to tubercle thus: "*It is altogether probable that it is owing to a 'degraded condition of the nutritive material,' which differs from that furnished under ordinary circumstances, not in kind, but in degree of vitality, or capacity*

for organization." (The italics are his.) This is the prominent idea of Dr. Ellis' prize essay, and now let us see if the idea is altogether new. In our paper previously referred to, and published in 1856, we made the following remark: "It is probable that fibrin, or a substance that is fibrin-like, may result from a retrograde condition of albumen. And it is my opinion, though that opinion may be hastily formed, that this fibrin-like substance, resulting from defective albumen that has failed to accomplish its object in the process of nutrition, is the pabulum of tuberculosis. In other words, *the albuminous material which in the process of nutrition is to form the elements of growth and repair, through some defect in its formative process, is, to a limited extent, incapable of cellular development; and this non-developmental albuminous product becomes the dead, fibrin-like concretion which is denominated tubercle.*"* We fail to perceive the difference between the prize essay opinions of Dr. Ellis, and those expressed by ourself, in an unpretending article, nearly five years ago.

While upon the subject of tubercle, we wish to pay a passing notice to articles in the *Medical and Surgical Reporter.* In the issue of that Journal for April 21st, under the head of "A New Theory of Phthisis," reference is made to a work just issued in London by Dr. Goodwin Tims, and to his opinion that tubercle is the product of "destructive assimilation," retained in the system because of imperfect excretion. In the *Reporter* for May 12th, Dr. E. J. Fountain, of Davenport, Iowa, complains that credit is erroneously given, and affirms that *he* first enunciated this opinion, in the July issue of the *N. Y. Journal of Medicine.* That Dr. Fountain believes his statement true, we will not doubt, but it is, nevertheless, slightly incorrect. Several pathologists, and among them we think we may mention Andral and Gavarret, have considered tubercle only modified fibrin. Because so considered, Simon called it *fibriniform.* Though fibrin was once considered the material from which textures were chiefly nourished, yet, for several years back, several eminent physiologists have regarded fibrin only an excrementitious product. Both the above ideas were fully brought out in our article, to which reference has previously been made, and they do not differ from those advanced by Drs. Tims and Fountain.

Mania à Potu.—In the *N. O. Medical and Surgical Journal* for May, Dr. Warren Stone has a very sensible article upon the above subject. Dr. Stone does not believe that *mania à potu* is caused by a

* AMERICAN MEDICAL MONTHLY, Vol. V., page 6, 1856.

stoppage of the accustomed stimulant, but rather by suppressed excretions and consequent retention of and poisoning by the alcohol imbibed. He advises in accordance with this idea, and we quote a passage or two illustrative of his treatment. "It is plain, under these circumstances, that the indications are to establish the excretions, disgorge the system of the alcoholic poison, and to introduce proper nutriment. The first two are accomplished by one and the same means. The stomach is generally irritable, at least there is frequent vomiting, but it is owing to the accumulation in the stomach of morbid secretion rather than from inflammation, or even irritation; for calomel in small doses, frequently repeated, arrests it with great certainty." He advises calomel, either in full doses or in small doses frequently repeated, if the patient is governable, until 15 or 20 grains are taken. This is to be followed in 8 or 10 hours with "small and repeated doses of saline medicine." These means "promote the excretions, disgorge the stomach and bowels, and clear the system of its alcoholic poison, to its great relief." . . . . "After this process, we should lose no time in introducing nutriment, and for this purpose milk is almost universally applicable; and as the mucous membrane of the stomach seems to be denuded of its epithelium, the addition of lime-water renders it particularly grateful and soothing. Patients in this condition generally loathe animal substances, but milk is almost always grateful to the taste, and is particularly appropriate, for it furnishes the most innocent solid for the bowels, that have been long deprived of their wholesome stimulus." . . . . "In all acute cases, alcoholic stimulants should be withheld, for they act like a poison, and will often bring back the delirium." . . . . "Opium, in all forms, should be prohibited, until the system is relieved thoroughly of its alcohol, and even then I find that it can generally be omitted; and when it can be, the patient recovers sooner and better." Where opium is indicated, he says, "Equal parts of morphia and tart. antimony, given in small and repeated doses, will soon calm the nervous system and induce sleep, without injury to brain or stomach. There is nothing that cools off the heated imagination in these cases like nauseating doses of tart. antimony; and opium in some form may be added, if it is thought necessary."

Our esteemed preceptor, Prof. Jared P. Kirtland, used to speak highly of antimony in these cases, and we have no doubt of its utility in the combination as above.

In favor of his plan of treatment, Prof. Warren Stone says, that of the many cases treated in his Infirmary, during the last ten years, he

does "not recollect of a single death, unless there was some grave complication more important."

Animal Heat.—But few subjects have ever proved more rebellious to a satisfactory elucidation and explanation than the *source of animal heat.* The most eminent physiologists of past, as well as of the present age, have alike exhausted their ingenuity without satisfactory results. Baron Liebig, several years since, gave an explanation that, from its simplicity and plausibility, acquired pretty general favor; a few, however, were not satisfied with his theory, and their objections are likely to demolish it altogether. Prof. Draper asserts, that "in every instance the production of animal heat is due to oxydation taking place in the economy." (Draper's Physiology, p. 182.) But where *oxydation* exists, there exists also *deoxydation*, and the latter is as much a cooling as the former is a heating process. We have not space nor inclination to review the several theories that have been proposed to account for the production of animal heat. It may be known to some of our readers that Prof. Bennett Dowler, of New Orleans, has for many years entertained peculiar views upon this subject. In the *New Orleans Medical and Surgical Journal*, for May, he has an article upon the subject, detailing many experiments performed by himself bearing upon his views.

Prof. Draper affirms that "heat depends on the power of the pulmonary engine," and says, "The absolute temperature will depend on the respiratory condition." Prof. Dowler opposes this idea, believing that animal heat is not dependent upon pulmonary combustion. We think he has the best of the argument. We have not the space to quote his opinions, but will, as concisely as possible, allude to a few of his more important arguments.

On examining the body after death, he finds the lungs lower in temperature than many other portions of the body; and, in many instances, he has found the heat of the body absolutely to rise for a little time after respiration ceases. In pneumonia and consumption, though in the former the office of the lungs is obstructed, and in the latter much of the lung substance may be destroyed, the heat of the body is usually, and perhaps always, above the normal standard. In sun-stroke, the respiratory act is very imperfectly performed, and yet it "is the hottest of all diseases."

Prof. Dowler objects to the nutritive theory of heat, that cold-blooded animals are often voracious eaters, and also, that the temperature of starving animals may be accelerated rather than diminished. This is not altogether a new idea; "the article *Abstinence*, of the

National Cyclopædia, (London, 1847,) enumerates the calorific manifestations of the economy during starvation, as follows: 'During the first two or three days the temperature is natural—subsequently the heat seldom sinks below the natural standard—finally, the skin becomes intensely hot—delirium, coma, &c.'" This is not in accordance with the statement of Dr. Draper, who says, "A starving animal dies of cold;" or that of Carpenter, who says, "Death by *starvation* is really death by *cold*." M. Savigna was once shipwrecked; many of his companions died of starvation, and he barely escaped the same terrible death. He says, and he speaks knowingly, that "*starvation* is accompanied with a *burning heat*."

We have not the space to continue the *Summary* of Prof. Dowler's paper. He was the first, nearly a score of years ago, and when M. Liebig's chemical theory was hailed with acclamations, to affirm "that the blood is *cooled* in the lungs by respiration"

In conclusion, we quote a few passages that show Prof. Dowler's views upon the subject of animal heat: "Calorification, like consciousness, understanding, will, vitality, matter, and mind, is an original endowment, inherent in man's constitution, the immediate cause of which is no more explicable by chemistry than man's color, size, altitude, &c." * * * "Vitalism, (the *vis vitæ*,) or vitality, is self-revealed, self-evident, and no more demonstrable by experiment, testimony or reasoning, than consciousness, mind, matter, space, duration. If physiology can claim any vital element or principle, the generation, with the maintenance of animal heat, takes precedence."

Whether the cause of the production and maintenance of animal heat shall ever be correctly explained or not, is certainly a matter of conjecture. In this matter our sympathies are with Prof. Dowler, for we have no patience with those physiologists who ignore the vital element, and make of man only a chemical laboratory. Chemical action does not constitute the whole of life; if it did, the chemico-physiologists might manufacture full grown a man or a horse at pleasure.

Metallic Ligatures.—Silver sutures have been declared the greatest discovery of the present century. The honor of priority of use may become a matter of dispute. Prof. Dowler, in the May number of the *New Orleans Medical and Surgical Journal*, says that Henry S. Levert, then of Alabama, (now of Mobile,) wrote a thesis upon the subject of *metallic ligatures*, which was presented to the University of Pennsylvania, and subsequently, in May, 1829, published in *The American Journal of Medical Sciences*. Prof. Dowler reproduces, in the number of his journal referred to, the experimental portion of this thesis.

Incontinence of Urine.—In the *North American Medico-Chirurgical Review*, for May, Dr. Emil Fischer reports three cases of incontinence of urine, occurring in the practice of Prof. S. D. Gross, successfully treated with the *actual cautery*, after a failure of a persevering use of the usual remedies in such cases. The patients were respectively 19, 25, and 35 years of age. The cautery was applied to the upper portion of the lumbar region, and an issue established and kept open about the "size of half the palm of the hand." The reporter says, "the improvement following this treatment was rapid and really astonishing, proving the great advantage of this kind of issue over all others, and the powerful impression it exerts, both upon the part and upon the system."

Ovarian Tumors.—In the *North American Medico-Chirurgical Review*, for May, Dr. J. H. Wythes says he has seen, "in two or three instances, tumors, apparently ovarian, as large as a child's head, in one case persistent for four years, removed by the use of an ointment composed of extracts of belladonna and cicuta, with ung. hydrarg. and lard; a drachm or two of the extracts, with an ounce of each of the others."

In one case, in which treatment was ineffectual, he attempted its removal with the knife. "It was found universally adherent to the abdominal parietes and viscera." He says, "I made an attempt to break up the adhesions on one side with my finger, but finding them firm, abandoned all hope of removing the cyst." The fluid was drawn off, a tent inserted at the lower angle of the incision, and the wound brought together with sutures. Thirteen days later, tincture of iodine was injected. These were repeated every few days for a month, and a cure was at length effected.

Caffeine as a Remedy for Opium Poisoning.—In the *Southern Medical and Surgical Journal*, for May, Prof. H. F. Campbell has an article upon the subject of caffeine and its properties of controlling the narcotism of opium poisoning, with an illustrative case. The case reported was a man aged 24 years: "It was positively known that he had taken, in a fit of temporary depression, over *one ounce and a half* of laudanum, nearly an hour before."

The condition of the patient was alarming, and various means were employed for his relief, with but little promise of benefit. The respiration "was found to be but four to the minute," and "several times the intervals between the beats of the pulse led us to fear that the patient had expired." A trial of caffeine was now determined upon. "A small quantity of the caffeine was rubbed upon the tongue, and to the inner surface of each cheek. The patient was then laid upon his

side, *and an injection of the coffee, with twenty grains of the caffeine dissolved in it, was administered by the rectum*, with a common syringe. The patient was then immediately raised again to the sitting posture, and the artificial respiration resumed."

In less than half an hour evidences of improvement were manifested, and continued to increase without interruption, until recovery was effected.

Prof. Campbell says, "If in caffeine, so powerful an alkaloid—possessing, in a concentrated form, all the antisoporific virtues of coffee—we have thus found an antidote for the narcotic effects of opium, and one which can be applied even in the most extreme states, *by injection*, we must feel that an important extension of its application as a therapeutic agent has been made, and that many lives may be saved hereafter, by its use."

Prof. Campbell thinks the dose given was quite too large, and advises from *five* to *ten* grain doses of the caffeine, repeated until the desired effect is attained.

Quinine in Croup.—In the *Southern Medical and Surgical Journal*, for May, Prof. H. F. Campbell has an editorial article on the treatment of croup, in which large doses of quinine are advised. Of croup, he says, "as has occurred under observation in the Southern country, we are persuaded, has an obvious and important relation to malarial fever." He divides the treatment into that which is appropriate during the attack and that which is appropriate during the remission. In the paroxysm, he regards "*emetics* of the first importance," and of these he prefers ipecac. He would also advise the local application of cloths wrung out of cold water. "When the emetic has acted efficiently, and the paroxysm is somewhat relieved, there remains great *hoarseness*, and a tendency to a return of spasmodic constriction. There is often great *dryness* in the laryngeal respiration. At this stage, we have found *turpentine* a most valuable remedy, administered in the following manner:

℞.—Of Spts. of Turpentine,	ʒj.
Brown Sugar,	℥ss.
Water, (warm,)	℥vj.

Mix well. Dose, one teaspoonful every hour or half hour, till the hoarseness subsides, when the time of administration may be prolonged." * * * "Our treatment during the *intermission* or *remission*, though by far the most important part, may be given in but a few words, for it may be summed up in these two: *Give quinine.*" "It is our constant, we may say invariable practice, to administer efficient doses of quinine each day, *for two days*, after each paroxysm of spas-

modic croup, with the view of preventing its return, and we expect this effect to follow its administration with as much certainty as when the drug is given in true paroxysmal fever." The dose recommended between each paroxysm varies from five to fifteen grains, in divided doses.

The quinine treatment of genuine croup is not altogether new, as our readers may know. Upon this point we take pleasure in referring to our *Summary* for December, 1859.

Of the quinine treatment, we then said: "For the last two years, the treatment that has been the most satisfactory in our hands, has been a combination of *quinine*, opium and ipecacuanha." * * * "Emetics we give when the symptoms seem to indicate their use, and generally select ipecac." We are glad to see the opinions of so high authority as Prof. Campbell correspond with our own, and the results of his experience confirm our observation.

We would advise those of our readers who have persisted in the old methods of treating croup, and of losing most of their patients, to read the article of Prof. Campbell above referred to, also a paper upon the same subject, in the *New York Journal of Medicine*, for September, 1859.

Diphtheria.—In the *Chicago Medical Examiner* for May, Dr. Orrin Smith has an article upon the subjects of croup and diphtheria, in which some opinions are expressed differing from those usually entertained. Of the pathology of diphtheria Dr. Smith says, "I apprehend there is often an error in making up the mind of the true pathology of this disease, for so long as the mucous membrane is in such a state of inflammation as to throw out the diphtheritic deposit, it is most certainly sthenic, or rather, inflammatory action, as in no other condition of the mucous membrane is this deposit thrown out; and I find it very *hard* to understand when the mucous membrane is in this particular and definable state of inflammation, how the contiguous areolar tissue can be suffering from asthenic action, or disease of debility; or in other words, how parts not one-fiftieth of an inch distant can be suffering, the one from active inflammation, and the other from the want of even normal tone. Nor do I believe that such a condition ever exists." When Dr. Smith asserts that the inflammation of diphtheria is "*most certainly sthenic*," we think he asserts a very pernicious error. He has evidently never seen the disease, or else observed it with different symptoms from such as accompany it in cases which have fallen under our observation. As we have seen it, it has seemed as though the disease was char-

acterized by the presence of a blood-poison, that was powerfully operative in producing a dissolution of the tissues. We have repeatedly seen deep sloughs, or ulcerations, form in the tongue, cheeks, lips, fauces, &c., in a very short space of time, and wonderfully indisposed to throw out granulations, even under the local action of powerful stimulants. We have also seen large abscesses form suddenly, and without premonition, or evidences of local inflammation, showing this tendency to dissolution of organized textures, as in impoverishment or poisoning of the blood.

We quote the conclusion of Dr. Smith's paper: "The duration of diphtheritic inflammation depends upon the character and efficiency of the treatment. If treated from the first with tonics and specifics, the duration may be for days and weeks. If treated as above indicated, that is, with as large doses of antimony as the patients will bear, frequently repeated, as is the custom of many to treat pneumonia, a few hours suffice. And with regard to debility—the bugbear which has destroyed its thousands—there is none of it, so long as the peculiar diphtheritic deposit is manifested, whether in the fauces, larynx, or trachea, and this deposit alone may be taken as evidence of active inflammation." To all this we are disposed to oppose only a little item of experience. We have treated ten or twelve cases, and when we could get our patient to take from half a pint to a pint of whiskey per day, if an adult, in the form of *egg nog*, we expected a recovery in a few days; and, under less efficient treatment, we have seen a low typhoid condition protract itself for six or eight weeks. Out of our cases one only died; a clergyman's wife, aged 51 years. She was not going to take whiskey; "no, she would die first." She was as good as her word, and died in spite of us. This woman's husband was taken equally as severe; he was more prudent, carried out our directions to the letter, and was not entirely confined to the bed for a day. Deductions from such experience are worth more to us than any amount of theoretical reasoning.

Radical Cure of Hernia.—Prof. J. J. Chisolm, in the May No. of the *Charleston Medical Journal and Review*, has a few remarks upon the radical cure of hernia. His plan of operation differs from that of Wützer, also from that of Wood; it is, in fact, a combination of the two. We will quote his description: "The operation consisted in invaginating a portion of scrotum, when a long staff needle, guided by the finger, was introduced into the ring, and was made to traverse the external column, near Poupart's ligament. When it protruded through the abdominal walls, one end of the thread was drawn out

of the wound, whilst the needle, which was now drawn backward, was made to transfix the internal column, near its attachment to the pubic bone, and appear through the skin, when the thread was drawn outward, and the needle, minus its thread, backward. By gliding the skin, as recommended by Wood, the needle, although perforating different portions of the external oblique tendon, made but one opening in the skin. Upon drawing the suture and securing it over a piece of bougie, the canal was puckered to closure." Four cases have been operated upon in this manner, with good results.

Prof. Chisolm makes one remark in regard to the silver suture not flattering to that much-lauded innovation. He says: "As the silver wire gave much more pain on withdrawing it than the pliant flax thread, and as its presence was equally *followed by suppuration*, I decidedly prefer either the silk or flax thread."

Abortion of one Fœtus in the Case of a Twin Conception.—In the *Charleston Medical Journal and Review*, Dr. J. Douglass mentions a case of a lady that aborted at three months, and six months later he says she was delivered of a full-grown and healthy child.

Iodine as a Remedy for the Poison of the Bite of the Rattlesnake.—In the *Chicago Medical Journal* for May, Dr. J. S. Whitmire has an article on the treatment of the consequences of the rattlesnake bite. Eleven years ago he first called attention to the properties of iodine in such cases, and now, after treating 75 cases, he repeats his confidence. He says: "When called in a recent case, or even within fifteen hours of the bite, I now adopt Prof. Brainard's plan, which is, to inject the cellular tissue, in and about the wound, with the tincture of iodine, by means of a sharp-pointed silver syringe, and then proceed to paint the swollen parts thoroughly with the tinct., and to keep in advance of the swelling, from two to three inches, and in recent cases this is all the treatment necessary to complete the cure. If called after the constitutional effects of the poison have become developed, I paint the limb, and even the whole body, with the tinct., and give, internally, wine or brandy with iod. potass. and chlor. potass., dissolved and largely diluted in water, till urgent symptoms begin to subside, and then administer quinine and iron as a tonic, &c."

Chloroform as a Therapeutic Agent.—In the May No. of the *St. Louis Medical and Surgical Journal*, Dr. F. W. White has a paper upon the therapeutic action of chloroform. In regard to its action he says, "In moderate doses it is a mild *sedative narcotic*, at first slightly stimulant, but not so exhilarating as alcohol, and afterwards sedative, without causing depression like opium." To quiet the nervous excite-

ment in fevers, he says, "I think there is no agent more efficacious or less objectionable than chloroform; this is true not only in fevers, but in all diseases characterized by exhaustion of nerve-power." In regard to its harmlessness, when administered into the stomach, as we suppose Dr. White means, though he does not say so, he says, "I have administered it for twenty-one days in half-teaspoonful doses every six hours, and more frequently, when required to procure sleep, without the least unpleasant symptoms."

That the nervous system plays a more important part in the manifestation and perpetuation of disease than is generally conceded, we firmly believe, and we believe that medication with reference to the nervous symptoms is too much neglected; though how much reliance can be placed upon chloroform in the accomplishment of the end here alluded to, we do not know.

We have several times used chloroform by inhalation, under circumstances in which we do not remember of having seen it previously recommended. As this may not be an inappropriate place to specify, we will do so briefly. In some cases of consumption, also in many other cases, death comes through a painful and protracted struggle. In such cases we have administered chloroform in small and frequently repeated doses, and for such treatment have had the satisfaction of receiving the warmest expressions of gratitude from the dying sufferer. In such cases we do not annihilate sensibility, but the patient is kept under the soothing influence of the chloroform, as the necessity of the case may require. Under this treatment the respiration of the dying consumptive becomes slower, less labored and painless, the cough becomes less frequent and less aggravating, and the otherwise protracted agonies become comparatively a period of comfort. The most piteous pleadings that we have ever heard have been for chloroform in these cases, and the most earnest and sincere thanks and expressions of gratefulness have been the last words of such, whose dying agonies we have thus divested of their terrors. To cure a patient that, left to nature, would die, is a duty that every physician takes pleasure in accomplishing; but, really, the most melancholy, and yet the most binding obligation, resting upon the physician, is to mitigate pain, and smooth the pathway to the grave, where a cure is placed beyond the possibilities of a hope.

Version by External Manipulation.—In the *Medical Press* for May 19th, Prof. Fordyce Barker reports a case of version by external manipulations. This subject is one of unusual interest at the present time. The conclusions which Prof. Barker thinks the case justifies

are the following: 1st. "That a malposition of the fœtus in utero can be detected by external manipulations during labor." * * * 2d. "I think this case demonstrates that a malposition of the fœtus in utero can be detected by external manipulations *prior* to labor." * * * 3d. "This case demonstrates the possibility of performing version by external manipulation during labor." * * * And 4th. "It demonstrates the possibility of *performing* version by external manipulation *before* the labor commences."

Gelseminum in Typhoid Fever.—In the *Medical and Surgical Reporter* for May 12th, Dr. E. H. Sholl has an article upon typhoid fever, &c., in which the following language occurs: "In the gelseminum, after much experience in its use, we have, I believe, a remedy of the most universal applicability that the world furnishes, and an invaluable addition to our means of combating disease in its various forms."

Treatment of Mania à Potu.—In the *Medical and Surgical Reporter* for May 19th, Dr. L. P. Gebhard has an article upon delirium tremens, in which novel views of pathology and treatment are proposed.

He believes the stomach to be mainly at fault, and delirium tremens essentially a *gastritis*, differing only from ordinary gastritis in a "peculiarity solely produced by the peculiar nature of its cause." We quote his treatment: "Believing the stomach to be in an inflamed state, and finding a tenderness of the epigastrium upon pressure, I have recommended cupping over the whole region of the stomach, and abstracting blood therefrom by scarification, with great benefit to the patient, relieving the delirium, and at the same time calming and composing his mind, which, together with the internal use of opiates, generally soon succeeded in procuring the rest so desirable in the cure of this disease. Very early in practice, I was in the habit of administering camphor with opium until sleep was obtained, which is generally known to be a *sine qua non* in all cases. Of late years I have given a mixture of sulphate of morphia, ext. of hyoscyamus, and ext. of valerian in a mixture, with decided advantage. I have never found it necessary to administer either alcohol or fermented drinks, in order to sustain the strength of the system; always finding that by lessening the inflammatory state of the stomach by external depletion and counter-irritation, combined with the internal use of mild narcotics, the recuperative powers of the system soon raised it from the depression and indirect debility under which it was laboring, and restored it to its former healthy state."

Tracheotomy in Croup.—In the *Boston Medical and Surgical Jour-*

nal, for May 3d, Dr. George Hayward, Jr., reports a case of membranous croup, occurring in a child fourteen months old, in which tracheotomy was performed, and the patient recovered. The case presents one or two points of interest; it is claimed that the case was complicated with pneumonia of both lungs, though the inflammation did not involve a very considerable portion of the lungs. In such a case, recovery would hardly be expected, as a common result from usual treatment. The operation was resorted to early, and before immediately alarming symptoms were present, and to this caution was probably due the success. There was nothing peculiar about the after-treatment, except that 15 drops of a solution of nitrate of silver (℈j. to ℥j.) were injected through the tube every three hours.

Pike's Peak as a Residence for Consumptives.—In the *Kansas City Medical and Surgical Review*, for May, in an article by a nameless writer upon the "*Medical Topography of Pike's Peak Gold Region*," the author has the following in regard to its adaptation for a residence for consumptive invalids: "To the *asthmatic*, and those laboring under a *tubercular diathesis*, no part of the globe promises more than this region. The purity and dryness of the atmosphere, and its diminished pressure, by which the chest is expanded, the exercise and diet, incident to a mountain life, together with uniformity of temperature, are hygienic conditions most favorable to this class. These theoretical views are fully corroborated by statistics. Among all the Indian tribes inhabiting this tableau, tubercular consumption is almost unknown. The government troops stationed at the different posts, and the army of traders and trappers that have peopled this region for the last half century, have enjoyed a like immunity from this fearful scourge of our race.

"Our advice, then, to this class would be to discard drugs and doctors, and leave the crowded cities where the damp, heavy atmosphere, loaded with impurities, counteract any good effect produced by medication; and forsake sea-coasts and watering-places—the common grave-yards of consumptives—and spend a season at Pike's Peak—not necessarily in searching for gold—but in chasing deer, antelope, and bear, and living upon their flesh; more particularly the latter, whose fats consumed in this elevated mountain home are worth all the *Oleum Jecoris*, Cod-Liver Oil, in the world. Here, and here alone, we verily believe, this mournfully interesting class of patients will find the long-sought *elixir vitæ*. It gushes out from every lofty mountain summit scaled by the invalid, is imbibed with every inspiration, hovers around every rude camp-fire, and is taken with every trophy of the invalid's gun, made upon this lofty tableau."

While we will not doubt the correctness of the above, we must express the conviction that the consumptive invalid will, or may, find localities where exercise may be found as conducive to health as at Pike's Peak, much nearer home. There is not a more foolishly vain thing in the world than the common practice of seeking for health at the various fashionable watering-places in the country.

Pure air, simple diet, active exercise, freedom from the conventionalities of fashionable life, early rising, early repose, and undisturbed and refreshing sleep at night, are all requisites in the invalid's seekings. The consumptive who has not the means nor inclination to go to Pike's Peak, can find all the requisites for health there to be found, and more, inside of the boundaries of the State of New York.

Foreign Bodies in the Œsophagus.—In the *Cleveland Medical Gazette*, for May, Prof. John Delamater has a very interesting communication under the head of "*Reminiscences of Country Surgery*," in which the treatment of foreign bodies in the œsophagus is well illustrated. We make one qaotation: "Failing in all my attempts to extract different bodies lodged as I have described above, I was compelled, as a dernier resort, to press them into the stomach, though this was done a little tremblingly at first, from the adverse current of popular sentiment, notwithstanding I had probably been led to apprehend, from various considerations, that the sufferings and loss of life which had been attributed to these foreign bodies, having been lodged in the stomach, were, *in most, if not in all instances, really due to their detention in the inferior part of the tube*, rather than from their delay in the stomach. But as I could observe no mischief to result from these bodies being pressed into the stomach, I became bolder in my way, so as not to bother myself much with other measures, and the result was that I have forced a good many cents, buttons, layers of shells, as of clams or oysters, into the stomach, without ever having been able to trace any subsequent evil or inconvenience to result therefrom."

The Effects of the Imagination upon Pain.—In the *Dental Cosmos*, for May, its editor, Dr. W. W. White, reports a case in which an ignorant female requested the extraction of a tooth by electricity, which she had learned was a painless procedure. Dr. White's electrical machine was entirely out of order, yet he requested his patient to grasp the metallic rods firmly, while he applied the forceps and removed the tooth. When the tooth was extracted she was buoyant with delight, *declaring that she felt no pain*, though, in fact, there was no more electricity passing from the battery than from the forceps used in the extraction.

REVIEWS AND BIBLIOGRAPHY.

A Treatise on Medical Electricity, Theoretical and Practical, and its Use in the Treatment of Paralysis, Neuralgia, and other Diseases. By J. Althaus, M.D. Philadelphia: Lindsay & Blakiston. 1860. Pp. 354. 12mo.

This handsome reprint fills an important niche which has been vacant for years. It is true that Aldini wrote on this subject, and with considerable ability; but so little has his book been read, that most physicians are ignorant even of his name. Matteucci, of Pisa, Becquerel, Duchenne, and Bois-Reymond, of France, Bird, of England, and other enthusiastic laborers in this department of science, have written useful and interesting treatises on the subject; still, these were too much occupied with mere speculations, and contained too little that was practical, to make them of general utility to the medical profession. Dr. Althaus, a German by birth and education, whose long residence in London has enabled him to manage the English with the facility of a native, has contrived to compress, within the compass of a moderate-sized volume, more useful matter to the physician on the subject of electricity than has been done by others in larger and more imposing treatises.

The book is divided into five chapters, treating respectively of—Forms of Electricity, Electro-Physiology, Medical-Electric Apparatus and its application, Electricity as a means of Diagnosis, and Electro-Therapeutics.

The differences between Static and Dynamic Electricity are very clearly set forth, and one is taught how different *quantity* and *tension* are, from an electrical point of view. Dynamic electricity is generally employed for therapeutic purposes, and is evolved from galvanic pairs, or an arterial magnet. This is capable, not only of passing through metallic conductors, but also through the human body, which is a conductor on account of the fluids, containing saline substances in solution, which permeate it. Matteucci concluded that "the muscles conduct four times better than the nerves, whilst the nerves conduct a little better than the brain and the spinal cord." This conclusion seems, to Althaus, somewhat empirical, being based on a series of experiments which involved unavoidable liability to error. Eckhard, of Giessen, published some experiments on this subject, in 1858, which are more reliable, and his conclusions were, "that the muscles are the best conducting tissue of the animal body; that there is no remarkable difference in the conductibility of nerves, cartilages, and

tendons; and that the bones are very imperfect conductors of electricity." The whole results of his researches can be thus expressed:

The resistance of	muscles	= 1.
"	cartilages	= 2.
"	tendons	= 2.1.
"	nerves	= 2.1.
"	bones	= 19.

Singular to say, these figures correspond with the amount of fluids contained in the respective tissues.

Having thus disposed of the subject of conduction, Dr. A. gives a clear account of Electro-Magnetism and Animal Electricity. In describing the conclusions of Professor Henry, of the Smithsonian Institute, on this subject, a slight error, doubtless of the printer, occurs: the induced currents in different spirals are opposite in direction to the inducing currents; hence, in the expression, "If the current induced in the second spiral be *positive*, that induced in the third wire would be positive again, whilst that induced in the fourth would be negative, that in the fifth positive again," &c., (p. 62,) the first *positive* is evidently intended for negative. In the brief description of Animal Electricity, there is also another error which deserves correction. It is stated, (p. 76,) in experiments made for the investigation of this form of electricity, that "both extremities of the wire of the multiplier are connected with platinum plates, which must be as *heterogeneous* as possible." Of course homogeneous is the word intended by the author, since he proceeds to say, "as the slightest difference between the two platinum plates would of itself cause a current," &c. In this connection, we may notice the contradiction of Matteucci's statement, that there is a gastro-hepatic current, constantly flowing, and one of the manifestations of animal electricity, which is not the effect, "but the cause of the chemical metamorphosis of the saline ingesta, the decomposition of which furnished acid to the stomach, and alkali to the liver." Donne's experiments, made in 1834, contradicted this idea, and satisfactorily demonstrated that this "so-called gastro-hepatic current is only an *artificial* electro-chemical phenomenon, and has nothing whatever to do with animal electricity."

The electro-physiological effects are different with the different forms of electricity, the *quantity* and *intensity* of the same, the property and function of the organ acted upon, and "the mode in which the electricity is transmitted to the organs." This chapter is replete with excellent suggestions, which should be read by every one who desires to study the subject of electricity in connection with physiology. The blunders committed by charlatans who propose to cure all

diseases by electro-magnetism, can be well understood after one has studied the *rationale* of the beneficial or injurious effects it may produce, and has learned how the cure, when improperly used, may be made the cause of aggravation of the disease. We should like to quote largely from this chapter, but space will not permit us, in the necessarily limited review we are making of this treatise.

The author shows (p. 152) how "inherent (Hallerian) muscular irritability has been proved: 1. By microscopic observations of Mr. Bowman, showing a partial contraction of muscular fibres, which have been entirely isolated from every extraneous tissue; 2. By the experiments of Bernard, Kölliker, and himself, with woorara, which kills the motor nerves, and leaves the muscles intact; 3. By the microscopic observations of Dr. Wundt, showing an action of the closed, continuous current upon the muscular fibre when the electrodes are directly applied to the muscles, and no such action of the stimulus be conveyed to the muscles by the instrumentality of the nerves. Thus, it is evident that by the electric current the molecular equilibrium of the muscles may be directly disturbed, just as well as the molecular equilibrium of the nerves;" * * but the latter is more easily disturbed than the former.

Medico-Electrical Apparatus and its Application forms the subject of the third chapter. Static electricity was first employed for medical purposes by Kratzenstein, (1744.) He was followed by Jallabert, (1748,) the Abbé Sans, (1772,) and Mauduit, (1778.) Althaus thinks that its use has generally disappeared from medical practice, because clumsy apparatus is required for its administration; there is difficulty in regulating the amount employed, and it is not possible to localize the stimulus in the parts required. The principal modes of employing it are: "the electric bath, electrization by sparks and shocks from the Leyden jar."

Shortly after the discovery of Galvanism, (1786,) it was employed by Heufland, Pfaff, Reil, and others, in disease; and Aldini's treatise (1804) was one of the first published on the subject. In the employment of the constant current, the batteries of Daniell, Grove, and Bunsen are recommended whenever *constant* physiological, chemical, or calorific effects are required—Daniell's being the best. *Pulvermacher's* chain batteries, which have been employed somewhat empirically in this country, consist of a series of pairs, forming a species of Voltaic pile, each wrapped around a piece of wood. The battery is put in action by first steeping it in vinegar; the wood absorbs sufficient to become a feeble conductor. The objection to them is the in-

constancy of the current generated, and the liability to the production of a cauterizing effect, if the position of the poles is not occasionally changed.

In the use of induction currents, which are furnished by the ordinary electro-magnetic or magneto-electric machines, much care should be taken as to the choice of a good machine. Althaus discusses this subject carefully, and arrives at some conclusions which we transfer to our pages. "The electrician should possess the two sorts of electrical machines—the Volta-electric for the treatment of paralysis and neuralgia, and the magneto-electric, if induction currents are employed in treating deficiency of vision, and for the absorption of rheumatic callosities. * * Every apparatus fit for medical use must possess a regulator, by means of which the intensity of the current may be easily increased or diminished; * * it must furnish two currents, viz., the primary current or extra current, induced by the action of the spirals of the thick wires on themselves; and the secondary current, or the current induced on the second wire, which is long and fine; and there must also be the *rheotome*, *cut-current*, or *contact-breaker*." Any induction machines possessing these qualities "may be usefully applied in medical practice."

The most important mode of employing electricity is that invented by Duchenne, and called FARADIZATION, and consisting in the local use of electricity by induction currents. Here, an effort is made to confine the electrical fluid to the organ under treatment. It was a beautiful idea to connect the name of the great English electrician with this most important use of electricity. There are two modes of electrifying the muscles: "by concentrating the electric stimulus in the nervous plexuses or branches, which communicate their excitation to the muscles animated by them, *(indirect muscular Faradization,)* or by directing the current to the muscular tissue itself, *(direct muscular Faradization.")* The application requires the employment of wet sponges, contained in cylinders attached to insulating handles; or, where it is to be limited to a small space, of small conical excitors, covered with wet leather.

We can barely transcribe from the chapter on *Electricity as a Means of Diagnosis* some conclusions on the subject of wasting palsy, which may enable the practitioner to get an idea as to the paralyzing lesion. "1. If the excitability of the muscles—or, rather, the polarity of the motor nerves—be *increased* in the paralyzed limb, the case is one of *cerebral paralysis*, connected with an irritative lesion within the cranium. 2. If the excitability of the muscles be nearly

or totally lost, we have, in all probability, either *lead-palsy* or *traumatic paralysis;* but it must be kept in mind that certain hysterical and rheumatic palsies of long standing present the same peculiarity; and that it also may be found in cases of diseases of the brain and the cord. 3. *If paralyzed muscles respond readily to the electric current,* there is no lead in the system, nor is the connection between the motor nerves of the paralyzed muscles and the cord interrupted; but if such cases are of *long standing,* they are due to *brain disease;* and if they are of *recent standing,* they are generally instances of *hysterical, rheumatic,* or *spontaneous* paralysis."

But electricity is also of importance in therapeutics, although its employment has been empirical with most of the profession. We are able to diminish or quicken the nervous action by its influence, and to produce wonderful results in the way of exciting dormant muscular action in paralysis, or quieting the hyperæsthesia of neuralgia. Althaus very sensibly observes, that "it must not be supposed that electricity can be successfully applied in every case of paralysis, spasm, &c., &c.; * * since loss of power, spasm, anæsthesia, and neuralgia are by no means well-defined diseases, but merely *symptoms of diseases,* to which the most various disorder may give rise."

In the treatment of paralysis by palsy, we find three propositions stated, as underlying the author's view of the subject. The galvanic stimulus has the power of producing such a disturbance "of the molecular equilibrium of the motor nerves and muscles, as to produce the state in which they are physiologically active;" "this allows the necessary alternate contraction and expansion of the muscles," and "thus augmenting the chemical changes in, that is, the oxydation of, the muscular tissue, causes a more abundant supply of arterial blood to it, which is evidenced by an increase of heat and bulk in those parts which have been galvanized, and which in its turn augments the nutrition of the muscle." These propositions being proved, he shows the proper mode of treatment in various forms of paralysis, as well as in chorea, writers' cramp, spasmodic wry-neck, tetanus, &c., &c. Great care is taken to prevent the adoption of the idea that electricity is anything like a universal panacea, but is only a very *efficacious* therapeutic agent in these affections. The author cannot be charged with the slightest taint of empiricism, although he has so fine a field for riding his hobby successfully. For instance, he doubts the efficacy of the electro-chemical bath, although "we cannot affirm, *à priori,* that it is devoid of all effect." In the review of Gregory's Chemistry, (American Medical Monthly, VII., 97,) we expressed our incredu-

lity as to the feasibility of this method, although we admitted the possibility of some action by means of the electro-chemical bath. This whole subject is based upon a paper presented by Poey to the French Academy in 1855, and the fallacies involved in the assumptions and statements of this author are clearly shown by Althaus; and furthermore, he adds, that "Eli B., affected with epilepsy, blackened with nitrate of silver, and recently castrated by Mr. Holthouse, told me in 1857, when I saw him in Nelaton's Clinique de la Faculté, in Paris, that he had tried the electro-chemical bath at New York, for a long time, to get rid of the black color, but without the slightest effect. In my opinion, this is a strong case against the electro-chemical bath."

The book closes with a short account of the application of galvanism in surgery, as an actual cautery, as a coagulant of blood in aneurisms and varices, and as a means of dissolving urinary calculi; for curing ulcers, promoting the absorption of exudates and dissolving cataracts. We heartily recommend the book to the careful perusal of our professional brethren. Let electricity be rescued from the hands of empiricism, since, in the words of our author, "in this remedy, more than in any other, the mode of application has an all-important bearing upon the results; for it is *not* electricity that cures diseases, *but the physician, who may cure diseases by means of electricity.*"

L. H. S.

The New American Cyclopædia: A Popular Dictionary of General Knowledge. Edited by GEORGE RIPLEY and CHARLES A. DANA. Vol. IX. *Hayne—Jersey City.* New York: D. Appleton & Co. 1860. Pp. 784.

The ninth volume of the Cyclopædia is well adapted to satisfy the expectations of its friends and patrons. The articles are prepared with special care, and they are remarkable for their freshness—a peculiarity of this publication which we have noticed in the earlier volumes. This freshness has been secured by employing the services of men of note and ability, not only in our own country, but also in Great Britain and the Continent. Their contributions present a marked contrast with those which fill the pages of like publications; the latter, although most generally accurate and reliable, are often dull and heavy, while the former are sprightly and attractive, as well as instructive. The publication has become a decided favorite with us; so much so, that whenever we find an article not fully equal to the other articles, in point of treatment or undue prolixity on an un-

worthy subject, (instances of this kind are rare,) we feel that we have a right to indulge in a quiet growl. This volume, however, allows us no opportunity for objection, and we place it on our bookshelves with unmitigated satisfaction.

The following members of our profession have been engaged in the preparation of the ninth volume: E. Brown-Séquard, London; John W. Francis, Levi Reuben, Charles Kraitsir, B. W. McCready, and R. S. Fisher, New York; and S. Kneeland, Jr., Boston. The number of collaborators engaged in *its* preparation is stated as nearly one hundred. The completion of this Cyclopædia is looked for anxiously by those who long for "a complete popular Dictionary of General Knowledge."

A Critical Dictionary of English Literature, and British and American Authors, living and deceased, from the Earliest Accounts to the Middle of the Nineteenth Century. By AUSTIN S. ALLIBONE. Vol. I. Philadelphia: Childs & Peterson. 1859. Pp. 1,005.

After a careful examination of the above, we can but express our astonishment that it is the result of the industry, energy, perseverance and ability of *one* author. We have never met a book, covering so extensive a field, which so completely realized all our ideas and wants on the subject under treatment. The power of condensation possessed by the author is evidenced in every line, while it never interferes with a most excellent feature of the book, its perfect reliability as to dates and figures generally. The want of such a book has been more or less felt by every student, and there never has been furnished, from the English press, anything so well adapted to supply it. Here we are to have (when the second volume is completed) some thirty thousand sketches and literary notices of English writers. Of each author some account is given—greater or less in length, as his own prominence or insignificance may require. This consists of the date of his birth, place of nativity, important appointments held during life, titles of writings, best editions of the same, and critical notices from contemporary or other writers, whose opinion would aid us in forming an estimate of the author's character. Now it will be understood, that this care is not only taken with the bright and shining lights of the literary world, but also with the *homines obscuri;* so that the student, in a small compass, is presented by Mr. Allibone with a perfect literary treasure, filled to the brim with the richest stores of bibliographical and biographical lore.

But Mr. Allibone, not satisfied with accomplishing all we have already noticed; promises us "forty indexes of subjects," which will enable the cultivator of any specialty, at a glance, to find "all the authors of any note in the language," who have written upon that particular specialty. These indexes will truly constitute "a comprehensive manual of English Literature," giving the book an additional feature of interest. The physician thus obtains a knowledge of the English literature of his profession, while he has at command a store of general information. The latter is, however, not to be overlooked by the medical profession. By a sort of natural right, a widely-extended department of knowledge falls within its range of study; all studies of nature belong to it, and the names of its members are connected with most of the discoveries of natural science. This has been so from the earliest periods of its history, down to the discovery of the planet Vulcan, by Dr. Lescarbault, the busy practitioner of the village of Orgères, during the year which has just closed. It will be a great thing to have at our hands a summary of what has been written by those of our profession, using the English language, and it may stimulate us to constant exertions towards increasing the extent of our heritage.

The first volume of Allibone's Dictionary comprises all English authors from *Abiel Abbot* to *Jyl of Breyntford.* The second is under process of preparation, and will appear as soon as such a work can be made ready for the press. We understand that a large proportion of the volume is already stereotyped. Our readers would do well to add this book to the number of those they employ for daily reference.

L. H. S.

PROCEEDINGS OF SOCIETIES.

American Medical Association—Thirteenth Annual Meeting.

FIRST DAY.

The delegates to the Association met in the Chapel of Yale College, at New Haven, Tuesday morning, June 5, and at 11 o'clock the Association was called to order, the President, Dr. Henry Miller, of Kentucky, in the Chair.

Prof. Fisher, of Yale College, opened the Convention with prayer.

Dr. Jonathan Knight, the Chairman of the Committee of Reception, welcomed the members of the Association to New Haven.

Dr. Charles Hooker, the Chairman of the Committee of Arrangements, also welcomed the delegates.

The roll was then called, nearly 300 delegates answering to their names.

The sections were then assigned their rooms, by Dr. Hooker.

All physicians and surgeons of the Army or Navy present were, upon motion of Dr. John Atlee, invited to take seats upon the floor of the Convention.

A report from the Committee on Parliamentary Rules was, after some discussion, laid upon the table.

Upon motion, a recess of ten minutes was had, to allow each State to choose its member for the Nominating Committee. Upon reassembling, the Committee on Nominations was declared; after which, the Association adjourned.

Afternoon Session.

The Association met at 3 o'clock, Vice-President H. F. Askew, of Del., in the Chair.

Dr. Charles Hooker introduced Gov. Buckingham and Lt. Gov. Catlin to the Association.

The Secretary, Dr. Bemiss, of Ky., then gave the names of the Committee on Credentials.

The retiring President, Dr. Henry Miller, then gave his address, which we are obliged to omit for want of space.

The Nominating Committee reported the names of officers for the Convention for the ensuing year, as follows:

President—Eli Ives, Conn.

Vice-Presidents—Wilson Jewell, Pa.; A. B. Palmer, Mich.; Joseph P. Logan, Ga.; J. N. McDowell, Mo.

Treasurer—Caspar Wistar, Pa.

Several invitations to visit prominent public places and factories of the city were read, and times set apart for such visits.

Motions were made of acceptance of the invitations, &c.

Motion made to suspend business and receive the officers just elected.

President Dr. Ives then appeared, attended by the escort appointed by the Association, and was cordially received by the members. He then made a very short address, of which the following is nearly a verbatim report:

"All he had, all he was, he owed to his profession. He loved it. He had two sons in the profession, also a grandson; and he, like a very distinguished physician of the present century, could say he would visit the sick as long as he could go, and when he was unable, he would be carried to the bedside."

He was followed by First Vice-President, Dr. Wilson Jewell, who, on account of the age of the President elect, it was agreed upon should preside over the deliberations of the Convention.

Dr. Davis, of Indiana, offered a series of resolutions to the specific business of morning and afternoon sessions, as follows:

Resolved, That the geneal meetings of the Association after this day, shall be restricted to the morning sessions, and the afternoon sessions, commencing at 3 o'clock, shall be devoted to the hearing of papers and discussions in the several sections.

Resolved, That each section shall choose its own officers, and make its own rules of order.

The first and second resolutions were adopted; the third, after much discussion, was laid upon the table, with the proviso that the mover should have an opportunity to revise it, and, at his own time, bring it again before the Association.

Dr. Little, of California, on motion of Dr. Timothy Childs, and seconded by Dr. D. S. Conant, was invited to a seat on the floor of the Convention, there being no delegate from California.

A Committee on Voluntary Communications was then appointed, viz.: Drs. E. D. Foree, of Kentucky; T. W. Blatchford, of New York; N. S. Davis, of Illinois; R. LaRoche, of Pennsylvania; Rochester, of New York.

At his own request, Dr. LaRoche was excused from serving on this committee.

Dr. Reuchenberger, of Pennsylvania, was appointed in his stead.

The report of the Treasurer was then called for, read and adopted, then referred to Committee on Publication.

The Committee on Publication then reported. Report accepted.

Committee on Prize Essays was called on to report, but failed to do so through absence. Adjourned.

SECOND DAY—WEDNESDAY.

The Convention was called to order by the 1st Vice-President, Dr. Wilson Jewell, of Pennsylvania.

The President announced that the subscription list for the publications of the Sydenham Society was on the Secretary's table.

An opportunity was now given for delegates to name physicians from States not represented, and from the Army and Navy, as members by invitation.

Dr. Gardiner moved that the rules of order be suspended for Dr. Logan, of Georgia, to tender his resignation as Vice-President. Resignation accepted.

Committee on Education reported—Dr. Reese, Chairman. He particularly dwelt on the necessities in preliminary education—Practical Anatomy, Pathology and Clinical Medicine. He ably supported his arguments in favor of lengthened terms of study, with a less number of lectures per day—four being the maximum.

Dr. Brodie moved that the Report and Resolutions connected with it be received and referred to the Committee on Publication. Received.

On motion, the report was received. The Association, on motion of Dr. McDowell, of Missouri, resolved itself into a Committee of the Whole, Dr. H. S. Acker in the chair, and proceeded to the discussion of the Resolutions.

A motion was then made that the Committee rise, report progress, and ask leave to sit again, which was carried.

The Committee on Nominations reported that the Convention will meet at Chicago on the 1st Tuesday in June, 1861. Amendment offered that it be changed to the 1st Tuesday in May.

Dr. Davis, of Ill., spoke for the Illinois delegation, urging June as the proper month—furthermore, he welcomed the Convention to the hospitalities of the citizens of Chicago.

Motion was made to change the time to the 2d Tuesday of June; unconstitutional.

The whole list of officers was not reported yesterday. The Committee on Nominations here concluded their report, as follows:

In place of 3d *Vice-President*, Dr. Logan, of Georgia, resigned, Dr. R. D. Arnold, of Georgia.

Secretaries—S. G. Hubbard, Ct.; H. A. Johnson, Illinois.

Committee of Arrangements—N. S. Davis, G. W. Freer, De Laskie Miller, E. Andrews, H. W. Jones, Thomas Bevan, J. Bloodgood, all of Illinois.

Prize Essays—Daniel Brainard, Ill.; D. L. McGugin, Iowa; M. L. Seaton, Mo.; John Evans, Ill.; A. S. McArthur, Ill.

Committee on Publication—S. G. Smith, Penn.; Caspar Wistar, Penn.; S. G. Hubbard, Conn.; R. I. Breckenridge, Ky.; Ed. Hartshorne, Penn.; H. F. Askew, Del.

Report of Committee on Prize Essays was called for—Prof. Worthington Hooker, of Conn., Chairman. Three Essays had been handed in—two of which had considerable merit, and showed much research. The Committee had concluded not to award any prizes this year. Report accepted.

Moved a suspension of the rules, to give Dr. Wilbur, of N. Y., an opportunity to report the protest of Dr. Ignatius Langer, of Iowa, against the action of the Committee of Arrangements in not accepting his credentials as a delegate. The President stated he held in his hand a letter stating that Dr. Langer had been expelled from the Scott County Medical Society of Iowa, and therefore the rules of the Society would not permit his acceptance as a delegate here.

Motion to suspend lost, almost unanimously.

Reports of Special Committees were then called for, and disposed of as follows:

Morbus Coxarius and Surgical Pathology of Articular Inflammation—Lewis A. Sayre, N. Y.; referred to the section on Surgery.

Surgical Treatment of Strictures of the Urethra—James Bryan, Penn., reported progress and asked for longer time; referred to its proper section.

Drainage and Sewerage of Large Cities, their Influence on Public Health—A. J. Semmes, Cornelius Boyle, G. M. Dove, D. C.; reported progress and asked for longer time.

Puerperal Tetanus; its Statistics, Pathology and Treatment—D. L. McGugin, Iowa; report the same as above.

Hospital Epidemics—R. K. Smith, Penn.; laid over.

Puerperal Fever—S. N. Green, Indiana; do.

Anæmia and Chlorosis—H. P. Ayres, Indiana; reported progress, and asked to continue the Committee, to report next year.

Veratrum Viride—J. B. McCaw, Virginia; laid over.

Alcohol; its Therapeutical Effects—J. W. Dunbar, Md.; asked

for a change in its title, making it read, "Alcohol in its relations to man,"—granted. Report next year.

Meteorology—J. G. Westmoreland, Georgia; laid over.

Milk Sickness—Robert Thompson, Ohio; partial report made—accepted and referred to section of Practical Medicine.

Manifestations of Disease of Nervous Centres—C. B. Chapman, Wisconsin; laid over.

Microscopic Observations on Cancer Cells—George N. Norris, Ala. Chairman asked to resign; Committee discharged.

Philosophy of Practical Medicine—James Graham, Ohio; laid over.

On some of the Peculiarities of the North Pacific and their Relations to Climate—William H. Doughty, Georgia; absent.

On the Microscope—John C. Dalton, Jr., N. Y., David Hutchinson, Ind., A. Y. Stout, Cal., Calvin Ellis, Mass., Christopher Johnston, Md.; report next year.

Dr. Dalton, Chairman of this Committee, tendered his resignation by letter; accepted, and the Committee discharged.

Diseases and Mortality of Boarding Schools—C. P. Mattingly, Ky., Dixi Crosby, N. H.—reported progress; referred to its proper section.

On various Surgical Operations for Relief of Defective Vision—M. A. Pallen, Mo., T. J. Cogley, Ind., W. Hunt, Penn.; laid over.

On the Blood Corpuscle—W. Sager, Michigan; referred to proper section, with additional time.

American Medical Necrology—C. C. Cox, Md. Report was ordered to be read before the Convention, Thursday; amended to have Dr. Cox retained as Chairman and report next year.

Effects of the Virus of the Rattlesnake, when introduced into the System of Mammalia—A. S. Payne, Va.; reported progress and was discharged.

Constitutional Origin of Local Diseases, and the Local Origin of Constitutional Diseases—W. H. McKee, N. C.; C. F. Heywood, N. Y.; laid over.

Subcutaneous Injections as Remedials—I. Langer, Iowa; not allowed to report, not being an accepted delegate.

Quarantine—D. D. Clark, Pa.; E. M. Snow, R. I.; W. Jewell, Pa.; E. D. Fenner, La.; I. W. Houck, Md.; asked to be continued. Agreed to.

Medical Ethics—B. F. Schenck, Pa., Chairman. Resigned, and asked that Dr. Paul F. Eve, of Tenn., be substituted; agreed to. Report next year.

Tracheotomy in Membranous Croup—A. V. Dougherty, N. J. Partial report; this was accepted, and referred to the Surgical Section. Further time allowed to make out the report.

Effect of Perineal Operations for Urinary Calculi upon Procreation in the male; J. S. White, Tenn. Letter from Dr. White read; laid over.

Mercurial Fumigation in Syphilis—D. W. Yandell, Ky.; laid over.

Cause and Increase of Crime—W. C. Snead, Ky.; asked to be continued. Agreed to.

Education of Imbecile and Idiotic Children—H. P. Ayers, Indiana. Report offered; referred to the proper Section.

Report of Committee on Medical Literature, referred to Committee on Publication; accepted without reading.

Pons Varolii—Partial report. The Committee wished to be continued; agreed to. Referred to the Section on Anatomy.

Afternoon Session.

The Convention was called to order by the Chairman at 3 o'clock.

According to the resolution carried the day previous, the Convention adjourned to the various Sections.

Third Day—Thursday.

The Convention was called to order at 9 o'clock—the President, Eli Ives, M.D., of Conn., in the chair.

Dr. Shattuck moved a suspension of the rules for the purpose of introducing two resolutions; carried.

Dr. Bowditch reported the following resolutions on the Hunter memorial to be erected in Westminster Abbey; accepted.

Resolved, That it be recommended to the different States to collect subscriptions, of not more than one dollar each, from every regularly educated physician. All moneys so collected to be forwarded by the Chairman of the Committee here, by appointment, to the Treasurer of the Hunter memorial in London.

Resolved, That Drs. Henry I. Bowditch, of Mass.; Amos Nourse, of Maine; G. B. Twitchell, of N. H.; C. Clark, of Vermont; G. L. Collins, of R. I.; Chas. Hooker of Conn., and many others, be a committee to collect subscriptions.

Resolutions adopted as a whole.

Moved that a copy of these resolutions be sent to all regular Medical Colleges in the country; carried.

Report of the committee appointed to confer with the American Medical Teachers' Convention. The resolutions were discussed at some length by Drs. Flint of N.Y., Shattuck of Mass., McDowell of Mo., Atlee of Penn., Brodie of Mich., Palmer of Mich., and Morse of Maine.

The whole report was adopted and referred to Com. of Publication.

Committee on Nominations reported—

Committee on Medical Literature :

Frank H. Hamilton, New York ; Edward Warren, Md.; Charles A. Lee, New York ; W. C. Ely, R. I ; E. H. Clarke, Mass.

Committee on Medical Education—

L. S. Sayres, Va ; C. C. Cox, Md.; I. C. Bradbury, Me.; L. H. Steiner, Md.; M. A. Pallen, Missouri.

Surgical Treatment of Stricture of the Urethra—James Bryan, Pa.

Drainage and Sewerage of Large Cities—A. I. Semmes, La.; C. Boyle, Ga.; W. C. Dove, District of Columbia.

Puerperal Tetanus: Statistics, Pathology and Treatment—D. L. McGugin, Iowa.

Anæmia and Chlorosis—H. P. Ayer, Ind.

Alcohol and its Relations to Man—I. W. Dunbar, Md.

Milk Sickness—Robert Thompson, Ohio; S. M. Bemiss, Ky.

On the Effect of Perineal Operations for Urinary Calculi upon Procreation in the Male—I. S. White, Tenn.; J. B. McCaw, Va.; R. C. Foster, Tenn.

Mercurial Fumigations in Syphilis—I. W. Yandell, Ky.

Cause and Increase of Crime—W. C. Snead.

Resolution made and accepted that a seal of this Society be given to every Medical College in good standing, and withdraw it upon evidence.

AFTERNOON SESSION.

The Association was called to order by the First Vice-President.

The President requested the Committee on the Hunter Memorial to retire for private business.

Report of Committee on Medical Topography and Epidemic Diseases referred to the Committee on Publication.

Committee on Hospital Epidemics discharged.

Committee on Puerperal Fevers discharged.

Committee on Veratrum Viride discharged.

Committee on Improvements in Surgery referred to the Section on Surgery.

Committee on Inebriate Asylums referred to Committee on Publication.

The President called for a report of each of the Sections.

1st. Anatomy and Physiology; referred to Committee on Publication.

2d. Practical Medicine and Obstetrics; report adopted.

3d. Section on Surgery; report adopted.

4th. Meteorology; report adopted and referred to the Committee on Publication.

Resolutions from the Essex County Medical Society of New Jersey were offered and adopted.

Moved that a special Committee be appointed to confer with the different Legislatures on the subject of the resolutions.

Motion made and carried that Dr. Cox be continued on the Committee on Necrology.

Report of the Committee on Tracheotomy was read; adopted. Referred back to Committee, to continue and report next year.

A communication from the Judiciary Committee of the Connecticut Legislature was read, asking that a committee be appointed to report a bill upon the subject of Criminal Abortion, for action at the next session; carried.

The Chair will appoint a committee in due time.

Moved that the American Medical Teachers' Convention be perpetuated in connection with the American Medical Association, and delegates appointed to meet from each Medical School, the day before the American Medical Association, at the same place.

Amended to "meet regularly," instead of being perpetuated; carried.

Moved that the Committee of last year on this subject be continued.

Moved by Dr. Atlee that the Hunterian Committee be empowered to fill all vacancies in it; carried.

Communication from Elmira, N. Y., read. Referred to Surgical Section.

Moved and carried, that a vote of thanks be offered to Dr. Bemiss for his efficient services as Secretary. Amended by substituting "Retiring Officers."

Resolution offered ~~of~~ thanks from this Association to the Faculty of Yale College, and to the citizens of New Haven, for their elegant hospitalities and kindness during its stay here; carried unanimously.

Dr. Hooker spoke to the Convention in regard to commutation tickets.

Moved that the Convention go into Committee of the Whole; carried. Dr. Askew in the Chair.

A discussion was called up in regard to the Resolutions of Committee on Education, Dr. Reese, Chairman.

Dr. Gardiner moved the Committee rise, report progress, and refer the resolutions entire to the Committee on Publication.

Dr. Hamilton, of Brooklyn, offered a resolution for a bill for the establishment of a College of Physicians and Surgeons of American Medical Association. Discussed by Drs. Hamilton, Gardiner and others. Resolution withdrawn.

Dr. Dixi Crosby addressed the Convention as to its general action.

Motion made that the Convention adjourn *sine die*. Carried.

EDITORIAL AND MISCELLANEOUS.

— *American Medical Association.*—The Thirteenth Annual Meeting of the Association, which was held during the first week of last month, cannot be considered as offering in its results any strong evidence of a lengthened existence. We should hesitate to say this, had we not a word to say in defence of the present condition of the Association.

Previous volumes of the Transactions have been ponderously voluminous, but not always for reason of the great value of the papers they contained. The forthcoming volume will be small. There will be no prize essay, few papers, and scarcely a report. A judgment, ripened by the experience of a decade of years, and a change—for the better, we believe—in the working of the Association, has finally resulted in the more critical survey of papers and the assumption of responsibility as regards publication by the Association, after a rec-

ommendation by the Section before which they may have been read. A smaller volume is therefore one of the first fruits of the present organization into Sections.

The plan is new, and should not be criticised as the working of an old institution. We believe, however, that the new organization will be found to be the best, after a fair trial has been made of it; and while we state our present disappointment in modest terms, we have a faith in the future action of the Association which is founded upon a belief in the wisdom of its organization.

The subject of Medical Education, which occupied the greater part of the time of the Association, was left precisely where it was taken up, the report of the Committee being simply accepted and ordered to be printed.

— The present number commences the Fourteenth Volume of the MONTHLY. In accordance with our design announced in the April number, we add to our former title that of NEW YORK REVIEW. No other change has taken place in the conduct of the journal. The editorial corps remains the same. We shall try to do our duty to our subscribers and to the profession at large, and look to our old and our new friends for that *true* support which encourages labor.

— *The American Medical Times* is the title of a new weekly which commences its regular issue with the seventh of July. The announcement states that it is a continuation in a weekly series of the *New York Journal of Medicine*, which has appeared for seventeen years, in a quarto form, every second month. The new journal is in appearance and arrangement a close imitation of the *London Medical Times and Gazette*. It is typographically neat, and gives every indication of being a weekly journal in every respect worthy of the abundant resources which New York furnishes to the medical student, whether in or out of the academic walls. Its editorial corps consists of Drs. STEPHEN SMITH, ELISHA HARRIS, and GEORGE F. SHRADY, all of whom are well known to those who have been at all familiar with the pages of the *New York Journal of Medicine* for many years past. The price of the new journal is $3.50 to city subscribers, and $3.00 when sent by mail.

— *Large Ovarian Cyst.*—Dr. Peaslee, on the 15th ult., removed *one hundred and fifteen pounds* of fluid from a single ovarian cyst, by tapping. The patient is a young lady twenty years of age, and her circumference before the operation was *five feet and one-half*, (sixty-six inches.)

THE AMERICAN

MEDICAL MONTHLY

AND

NEW YORK REVIEW.

AUGUST, 1860.

ESSAYS, MONOGRAPHS, AND CASES.

Mammary Abscess occurring during Lactation. A Lecture delivered in the University Medical College, New York, by T. Gaillard Thomas, M.D., Physician to Bellevue Hospital.

Anatomy of the Mammæ.—The lacteal glands, or mammæ, are composed of numerous follicles grouped together; forming lobules, which penetrate to different depths into the structure of the organs, and give them the character of racemose and conglomerate glands.

Each lobule has its own excretory duct; this joins those from neighboring lobules, and in this way growing larger and larger, until they become reduced in number to fifteen or twenty capacious canals, they pass upward, to end at the nipple by as many small mouths. These dilated portions of the milk-ducts or lactiferous tubes are called reservoirs, and, although not largely developed in the human subject, in the cow will contain a quart of fluid.

Each of the lobules above mentioned is separated from its neighbors by a considerable quantity of areolar tissue, which admits of the free motion of one upon the other, and serves as a bed for the blood-vessels

and nerves of the organs. This is the proper parenchyma of the mammæ, and, according to Todd and Bowman, exists in them in "extraordinary abundance."

It is important that you should recognize the fact that this areolar tissue is extremely dense and fibrous, and that it serves not only the purposes of connective material, but that it proves protective and supporting. Passing throughout the gland between the lobules and ducts, it sends strong prolongations to unite with the posterior surface of the skin, which are styled by Sir A. Cooper the "Ligamenta Suspensoria;" and at the periphery of the gland it forms a proper tunic, very much like the "tunica albuginea" of the testicles, or that of the ovaries. In its passage throughout the gland, this dense areolar or fibro-areolar structure forms alveolæ, or vacant spaces, which are filled by adipose tissue; a tissue which Cruveilhier tells us may be found at the very centre of the glands, between the lobules, and in obese women even between the follicles themselves. These alveolæ do not communicate freely with each other, hence the remarkable localization of inflammations attacking the superficies of the gland.

The mammæ rest upon the great pectoral muscles, and are separated from them by a layer of areolar tissue, which enables them to move about as freely upon their bases as they do. This layer of areolar tissue, which for convenience we may style the submammary, is susceptible of some remarkable changes, not the least of which is great distention after repeated lactation; indeed, Velpeau quotes Nélaton for the assertion that a synovial sac (*"une sorte de bourse synoviale"*) may form there, which is liable to a variety of effusions and inflammatory processes.

The arteries of the mammæ arising from the thoracic branches of the axillary, from the intercostals, and from the internal mammaries, penetrate to the interior or interlobular portions of the glands, and spread themselves in a fine network upon the ultimate follicles.

In absorbents the mammæ are rich, for the investigations of Cooper, to whom we owe almost all our knowledge of their minute anatomy, have demonstrated the presence of two sets; the one superficial and subcutaneous, the other penetrating to the interlobular regions.

The mammary nerves arise from the intercostal and thoracic, and a distinct connection with the great sympathetic exists.

But to return to the ducts and follicles. Were it possible to remove one lactiferous tube and its follicles from the surroundings which we have just been describing, one extremity would be the mouth of the duct as it ended in the nipple; the other would resemble a bunch

of grapes, each lobule appearing with its numerous follicles or clusters of milk-cells, like a cluster of grapes around one of the terminal extremities of the stem.

Next we will take a section of this tube and its clusters of follicles, and examine them under the microscope. The follicles are very small, each being, according to Sir A. Cooper, about as large as a hole pricked by a very fine pin in a piece of paper, and by measurement giving us only the $\frac{1}{200}$th of an inch. Small as they are, however, the powerful lens shows us that they are lined by a layer of delicate epithelial cells, whose function it is to separate from the blood the first food of the mammalian being. As the eye leaves this extremity of the lactiferous twig and passes on towards the duct which leads from it, a stronger structure begins to appear; its walls show fibrous and yellow elastic tissue, and a lining of columnar epithelium. As we go on, the tube increases, until, towards its mammillary end, it grows small, and becomes sphincteric at its termination, being finally closed by surrounding contractile fibres, like those of the Dartos.

I have already informed you that at the superficies of the mammæ the areolar tissue arranges itself in the form of a tunic or external covering; this is further covered by a thick layer of adipose tissue, which sometimes becomes very voluminous, and explains the fact that fat women with immense breasts will often prove poor nurses, since the size of the organs does not by any means insure extensive glandular development.

Viewed as a whole, the mammæ may then be said to be two glands, composed of lobules and ducts, bound together by dense areolar tissue, in which run blood-vessels, absorbents, and nerves; the mass thus formed being snugly packed away between the areolar tissue which separates it from the pectoral muscles, and that which forms its external tunic, and which is bounteously supplied with an adipose accompaniment.

Physiology of the Lacteal Secretion.—Between these glands and the uterus a direct and prominent sympathy shows itself from the moment of conception, and indeed is sufficiently evident in the unimpregnated condition. Towards the fifth month of utero gestation, an actual secretion of milk begins, the breasts grow hard and irregular in contour, become tumid and more or less painful; and this state continues until the period of parturition.

After the parturient act, no immediate increase of sympathetic influence is manifested; the breasts, indeed, appearing affected by the sanguineous loss, the vomiting, physical and mental suffering, and ab-

stinence from food incident to that process, become less tense than they were before, and their flabby, soft, and collapsed aspect will often alarm the primiparous mother, lest she lack nourishment for her offspring.

On about the third day, however, the enfeebled sympathies begin to manifest themselves and to increase in development; the breasts swell and become harder and more irregular than before, their temperature is increased, and they become painful and tender. Now, too, the constitution of the woman begins to show evidences of disturbance; the pulse becomes quick, the skin warm and dry, chilliness is often complained of, the patient is restless, thirsty and uncomfortable, and her attendant designates as " milk fever" the *ensemble* of her symptoms.

If, at such a period as this, a section of the gland were placed under the microscope, we should find the epithelial cells of the follicles larger and much more numerous than in the unimpregnated female, and they would be found filled with the constituents of the coming secretion, fat globules being the most distinctly discernible. The lactiferous tubes would be loaded with a thick, yellowish, turbid mixture, to which Donné has given the appellation of Colostrum, and which, though upon being squeezed out is apparently thinner than milk, has been proved by chemical analysis to be really thicker.* Under the microscope, this fluid shows the presence of some irregular oval bodies, each composed of a group of minute oil-globules, imbedded in a mass of organic substance. They vary from $\frac{1}{1750}$ to $\frac{1}{500}$th of an inch in diameter, and are the " colostrum corpuscles" of Donné.

Now let us glance at the parenchyma of the glands and its contained vessels and nerves. The areolar tissue between these tumid follicles is swollen, by reason of its blood-vessels being turgid from increased flow of blood, which is first stimulated by the above-mentioned sympathy, and then interfered with in its return by pressure from the distended lobules. This pressure the strong and determined arterial flow overcomes; but the feebler venous current is unable to do so, and a mechanical congestion results.

Between these lobules, infarcted by a semifluid secretion, and the blood-vessels distended by an active (physiological) and a passive (mechanical) congestion, lie the nerve filaments, the results of compression of which are pain, tenderness, and throbbing.

You will perceive, by even this superficial examination, that at such a time all things are particularly favorable for the alighting of inflam-

* *Vide* Lehman, Vol. II., p. 63.

matory action, and for its progress to great engorgement and suppuration. Indeed, it is not at all to be wondered at that such a state so often produces those pathological conditions, for the physiological action so prepares the way for that which is pathological, that it is hard to draw a dividing line, and say where one ends and the other begins.

Seats of Mammary Inflammation.—The parts of the mammæ which are ordinarily affected by acute inflammation are:

1st. The lactiferous tubes and follicles.

2d. The fibro-areolar tissue; subcutaneous, interlobular, or submammary.

Inflammation of the Lactiferous Tubes and Follicles.—This species of mammary inflammation corresponds to, and is produced by, much the same kind of cause which would result in bronchitis, catarrh of the bile-ducts, orchitis, and other like tubular inflammations; and its special causes may be enumerated as:

(*a.*) Exposure to cold.

(*b.*) Irritation from inflamed nipples.

(*c.*) Excessive lactation.

Symptoms.—The symptoms of this inflammation are generally so well marked in the beginning, that it may readily be distinguished from that originating in the areolar tissue; if, however, the case has advanced, no diagnostic difference will be found to exist. At its inception, it may be recognized by:

(*a.*) Rigors and fever.

(*b.*) Deficient excretion of milk.

(*c.*) Pain upon suction.

(*d.*) Hard and excessively painful points in the breast.

(*e.*) No *general* tumefaction, redness, nor tenderness.

(*f.*) Great suddenness of invasion.

This is the state that is so often found as a consequence of exposure to a draught, or to a shower of rain, and which sometimes so readily passes off by the use of fomentations, as practiced empirically by all nurses. Should the disease, however, progress unchecked, lacteal engorgement of the follicles first results, then inflammation of the areolar tissue; and what was in the beginning a simple catarrh of the ducts and follicles, soon becomes one of true mammitis, or inflammation of the parenchyma of the gland.

Diagnosis.—I wish to leave in your minds, gentlemen, a very distinct idea concerning the essential difference between such an inflammation, commencing in the milk-ducts and follicles, and preventing

the flow of milk, from a simple lacteal engorgement, the result of non-evacuation of that milk which has been secreted; for the one is a comparatively unimportant affair, while the other, unless well managed, will end in abscess. Velpeau describes these states synonymously, (or, rather, confounds the two conditions;) and although no man lives to whose opinion on such a subject I would sooner bow, I cannot agree with him; for, after observing closely at the bedside, and discarding all theory, I am convinced that he is incorrect. With the motto, "*Nullius addictus in verba magistri jurare,*" let me try to sustain this view by the relation of a case of inflammation of the milk-ducts and follicles as a result of cold.

Mrs. R., a multipara, was sitting, four weeks after delivery, before an open window in a loose evening-dress, when she was taken with a chill, which was followed by fever, and pain in one breast. She was soon after seen by me, and upon examination, I found a hard tumor near the surface of the organ, about the size of a walnut, and excessively painful. The pain was increased upon lactation, which seemed to produce no diminution in the size of the swelling.

I will not detail the treatment adopted. Suffice it to say, that after about two weeks had passed, signs of inflammation of the parenchyma showed themselves, and that an abscess was the result. Now, what was this? An engorgement of milk? If so, why did it occur so suddenly, from those causes which we know so often result in inflammation of mucous tracts, with so much constitutional excitement, and why did only one lobule of the gland suffer? Was it inflammation of the parenchyma? Then why was there no heat, redness, and rapid tendency to suppuration, which Velpeau and most others acknowledge characterize this state? My belief is, that the mucous membrane of one lobule, and probably of its excretory duct, was inflamed; that this resulted in obstinate lacteal engorgement, which in turn resulted in mammitis.

We commonly have lacteal engorgement when a nursing woman's child is taken from her; does this, *before it has resulted in inflammation of the parenchyma,* ever give such constitutional signs?

But I cannot give you a better substantiation of my view of the subject than by detailing one of Velpeau's numerous cases, which I think will better argue in my favor than anything which I can say.

OBS. VIII.—"Lacteal engorgement resulting from exposure to cold fifteen days after a second confinement."

The female was delivered, and did well until the fifteenth day, when the narrator proceeds to say: "Then the patient, who was exposed

to cold, was taken with chills, and a very high fever, which, however, lasted a short time. A severe lancinating pain established itself at the same time in the right breast, which was at once covered with an emollient poultice. *Two days after the patient observed that the breast became engorged*, and became more and more painful." The Dr. saw her on the first of January, one month after delivery, and therefore fifteen days after the chill and pain in the breast; then, he says, "the right breast presents at the interior portion a large swelling, indistinct, sensible to the slightest pressure, with some hardness, and without cutaneous redness. *This engorgement seemed to have come from the interior of the breast, and to gain insensibly the external part by following the lactiferous ducts.*" (The italics are all mine.) So far, I think, you will not deny me considerable support from this history; but now listen to the treatment, and its results. "Fifteen leeches were applied near the painful spot; on the next day the pain had disappeared, and the engorgement, on which poultices were kept constantly applied, had notably diminished." And why did they diminish? Not because leeches and poultices can disgorge the breasts when choked with milk, for it would be irrational to suppose this, but because they relieved inflammation in the follicles and ducts, and thus allowed secretion and excretion to go on, where they had been before interrupted.

These are the means by which one state may be distinguished from the other:

Lacteal engorgement shows itself by:	*Inflammation of follicles and ducts by:*
Gradual hardening of lobules.	Sudden hardening of lobules.
No pain at first.	Pain sudden and severe at first.
No chill, nor high fever.	Chill, and very high fever.
Several or many lobules affected.	One or two only affected.
No great tenderness on pressure.	Great tenderness on pressure.
Lactation and friction relieve.	Lactation and friction do not relieve.
Breasts full and rotund.	Breasts rather flabby, except at one spot.
Excretion of milk readily excited.	Excretion not readily excited.

Be it remembered, however, that lacteal engorgement alone may produce, if neglected, inflammatory results, (perhaps in the ducts and follicles, but more commonly) in the parenchyma of the gland.

Mammitis, or Inflammation of the Parenchyma of the Breasts.—This disease bears to pneumonitis the same relation which inflammation of

the ducts does to bronchitis; and as pneumonitis may result from bronchitis, or arise primarily, so may mammitis be either secondary to inflammation of the ducts, or have a cause which produced it as the original affection. As, however, there are three distinct divisions in the areolar tissue of the mammæ, in each of which it differs, (in the one being accompanied by much adipose tissue; in another, containing much of the fibrous element; and in the third being loose and purely areolar,) we are forced to recognize three varieties of inflammation arising in it:

1st. Subcutaneous.

2d. Interlobular.

3d. Submammary.

In the first of these, the inflammatory action is confined to that portion of the areolar tissue which is peripheral or subcutaneous; and although it may do so, does not necessarily pass into that which is deeply interlobular. In the second, the morbid process may arise externally, and pass inward; but more commonly arises internally, and subsequently affects that portion of the areolar tissue which is more superficial. In the third, the pathological process may be confined to the submammary tissue, and pus collecting therein may evacuate itself by coming to the border of the mamma.

Fortunately, it is not commonly the deep interlobular areolar structure which is thus affected, but that which is superficial, external to the gland-structure, and dividing only the most superficial of the lobules. This superficial inflammation is of course much less severe in its results than would be that which is more deeply seated, in the gland itself, or in the submammary tissue; but, as all three are inflammations of the same kind of structure, and this structure constitutes one of the elements of the mammæ, I have deemed it best to regard them all as mammitis, or inflammation of the parenchyma of the mammæ. True, a purely subcutaneous or submammary abscess might arise without any portion of the gland-structure being affected, but the obstetrician will rarely meet with a perfect case of this kind; and as our nomenclature should apply to the rule, and not the exception, I think that we will avoid confusion by pursuing this course. I have often met, during lactation, with small subcutaneous abscesses, more particularly in the areola, which evidently did not in any way affect the gland; but such do not by any means deserve the name of "mammary abscess."

In frequency of occurrence, the abscesses arising from these varieties of inflammation may thus be arranged:

1st. The subcutaneous abscess.
2d. The interlobular "
3d. The submammary "

Causes of Mammitis.—As the causes, symptoms, and treatment of these three varieties of mammitis resemble each other closely, we will proceed to investigate the disease in its different localities as a unit, begging you to remember, however, that a much slighter injury or irritation will suffice for the production of the more superficial varieties than would do for the deeper seated.

The causes of mammitis are:

(*a.*) Exposure to cold.

(*b.*) Injury.

(*c.*) Lacteal engorgement, (whether it occur from neglect, inflammation of ducts, or aversion to nursing from sore nipples.)

(*d.*) Excessive sanguineous congestion, with commencing lactation, (physiological congestion gradually verging into that which is pathological.)

(*e.*) Inflammatory affections of nipples or skin, as ulceration, eczema, impetigo, erysipelas, &c. How the first, second, fourth, and fifth of these causes may result in mammitis, it is not necessary for us here to inquire, since the same explanation will attach to their influence in producing this inflammation, as it does to their mode of causation in many others of like character.

The third cause, which is probably the most prolific of all as a cause of mammitis, proves effective in this way: The follicles and tubes becoming gorged with milk which is not evacuated, the former enlarge into the form of irregular tumors, press upon the surrounding vessels, prevent perfect venous return, and thus rapidly bring about a parenchymatous engorgement, which may result in abscess. Let me, by a familiar example, illustrate these remarks: You are all acquainted with that disease of the sebacic follicles of the face and shoulders, called acne simplex, which produces angry "pimples," as they are called, or pustules as they really are, on the faces of those just arriving at the dignity of a beard; watch one of these through its course, and you will readily trace these steps. First a black speck is seen, which consists of duct enlarged at the exposed end by a mass of sebaceous material which is retained in the unemptied gland. No redness surrounds this; no pain is experienced; and if the gland be squeezed at its base, a small worm-like body, with a black tip, is displaced, and the affair is ended. Should repletion of the sac still continue, however, a roseate circle is observed around the black speck, inflammation has

set in in the surrounding areolar tissue, and the second stage of this miniature disease is at hand. A few days after this, suppuration is fully established, and should the mass now be squeezed, the operator is gratified by the forcible ejection of a plug bathed in pus, which will often fly out with sufficient force to attach itself to the mirror which probably guides his manipulations.

Now this is, *in parvo*, the process of formation of a mammary abscess from lacteal engorgement: *i. e.*, 1st, simple engorgement of the follicles; 2d, inflammation of neighboring areolar; 3d, suppuration and abscess.

One circumstance (which I have so often mentioned to-day) must be borne in mind as constituting a difference, however, between the two inflammations; namely, that in the mammæ the resulting inflammation is generally in the superficial areolar tissue, or that dividing the most external of the lobules.

Upon observing that even inflammation of the ducts must result in secondary mammitis before a true abscess can be formed, the student is apt to ask, "Why make a distinction, since the result is the same in both cases?" To such a question I would reply, "Because without doing so we could not get concise and accurate views of the diseases of any organs of the body, and because in the beginning, before one of these pathological conditions has run into, or produced, the other, the treatment of the two will differ." Orchitis may result from epididymitis, and epididymitis from urethritis, or either may arise primarily. Can any reason be given why, *ergo*, all three should be confounded under the name of inflammation of the genitals? Or why, in studying abscess of the testicle as a result of orchitis, we should ignore inflammation of the spermatic cord as a primary cause, which results in abscess by producing this very orchitis? Medical nomenclature is the student's "slough of despond," and from its fettering influences many a practitioner has grown old with indistinct and confused notions of diseased conditions; and with all due respect for so high and worthy an authority as Dr. Watson, I must say that nothing more clearly illustrates the difficulties which surround its improvement than the sight of his endorsement of its non-progressive state by speaking of endocarditis, pericarditis, and carditis, all under the head of "rheumatic carditis," as he does in his work on Practice.

But let me, in the present case, show how much is gained by attention to the true pathology of the states we are studying.

Inflammation of the ducts does not always end in mammitis, even when it progresses to an unfavorable termination; sometimes lymph

is poured out into the tubes by which they are occluded, and such immense distention of the reservoirs occurs from accumulation that a true milk deposit is formed, which may contain quarts of pure lacteal fluid, and which it is necessary to evacuate by puncture. Dr. Willard Parker, of this city, reports a case where three quarts were thus evacuated by a first incision, and three pints by a second one; and Scarpa tells of a still more remarkable one, where the distended breast measured thirty-four inches in circumference, and rested, when the patient sat, upon the corresponding thigh; a trocar being introduced, ten pints of pure milk poured off in a continuous stream. Now, how could you understand this condition, without being acquanited with the distinction as to the origin of mammary inflammation, which has here been made? Not only may milk be thus collected in a cyst-like dilatation of a duct; the watery portions may be absorbed, and a caseous tumor, or "butyrous tumor," (as styled by Gross,) be formed, and under such distention the duct will sometimes rupture, and the distending material be infiltrated into the areolar tissue of the gland.

Pathology of Mammitis.—As I have endeavored to show, no true mammary abscess can occur unless there be inflammation of the areolar tissue of the breasts. Such inflammation progresses through three stages, giving in each the following morbid appearances: If a breast be examined in the first stage, its blood-vessels will be found distended, and gorged with blood; red corpuscles will be discovered packed closely together, and choking their little canals, and a stasis, (marked during life by heat, swelling, redness, and pain,) will be found existing.

Very soon, unless this congestion be relieved, an effusion of lymph takes place into the areolar tissue surrounding these vessels, and instead of having that appearance which gave it, according to early writers, the name of "cellular tissue," it is firm, and cuts like a solid tumor. This constitutes the second stage, or stage of effusion. If this stage be left to itself, very soon suppuration will occur; and if examined in this, its third stage, pus will be seen insinuating itself into the meshes of the areolar tissue, perhaps passing between the ducts and follicles, and often forming sinuous passages throughout the organ. In one point this pus collects, advances towards the surface, distends the skin, gives to the finger the sense of fluctuation, and constitutes the much-dreaded "milk abscess," or "broken breast," the mere mention of which will make your parturient patient shudder with apprehension.

Prognosis of Mammitis.—As you will see by the sequel, I believe

that in many cases this disease may be prevented when threatened; and fortunately, after its first stage is fully established, it may be readily cut short in its course. Nay, more; if proper means are at once adopted, and persisted in, failure, so far from being the rule, will constitute the inglorious exception.

Even when effusion has occurred, and we recognize the presence of the second stage, the prevention of abscess, though more difficult, is still quite possible; the exuded lymph may be taken up, the choked-up currents of the vessels freed from obstruction, and resolution, or return to health, be attained.

When the presence of pus is once ascertained, there is no more room for hope of prevention, for the evil is already upon us, and all that we can do now is to extricate our patient as soon as possible from it, and protect her from its resulting waste of strength.

The prognosis, as regards recovery after the discharge of the purulent collection, is, of course, favorable, but you will be amazed to see to what a degree this disease will sometimes reduce even a strong and healthy woman. Emaciation, extreme debility, night-sweats, hectic fever, and the whole dread train of symptoms which mark phthisis pulmonalis, will in succession appear, until the poor sufferer, worn with pain and bankrupt in hope, will pray for death to relieve what the art of man seems impotent to cure. True, this picture is one of a badly-managed case; it is the story of an unfortunate who has confided in one who is unprepared to give her that aid which his art through a more capable disciple might render; but believe me, that it is not a rare one; that I have seen it several times in this large city; and in evidence of the fact that my coloring is not too high, hear what others have said in describing it. Dr. Ramsbotham says, "If the drain continue for any length of time after the evacuation of the pus, a gradual loss of strength, appetite, and flesh is observable; distressing rigors occur daily; the patient obtains but little refreshing sleep, and is annoyed by profuse nocturnal perspirations; sometimes she is harassed with sickness, more frequently with obstinate diarrhœa." Again, he says, "The body has been known to dwindle to a mere shadow. In some instances, the patient has sunk under the debility induced." Dr. Gilmour, in an Essay in the *Lancet*, says, "I have a patient under my care at present, aged twenty-three, with sinuses in one breast of six weeks' duration, who presents all the appearances of a person far advanced in phthisis;" and Benjamin Bell alludes in strong terms to the "pain and misery to the patient in such cases."

A very curious and important result which sometimes follows the

formation of these abscesses, is that exerted upon the brain. Sometimes the patient becomes furiously delirious, and the symptoms lead us to a diagnosis of puerperal mania, when this slight collection of pus is the cause of the mental aberration. The acute observation of Hippocrates did not allow him to overlook this fact, as is clearly seen by the following passage: "*Mulieribus quibuscunque ad mammas sanguis colligitur insaniam significat.*"—(Opera., 1588, tom. i., lib. v., aphorism xl.)

Ramsbotham relates the following case in corroboration of this fact: "I was once sent for to see a woman, on the third or fourth day after delivery, in a state of the most furious delirium that can be conceived, which had come on rather suddenly. She appeared laboring under the most acute phrenitis, and in the most urgent danger. A copious bleeding seemed absolutely indicated, but on examining the breasts, (as should be done in all puerperal diseases,) I found them both very large and tense, and the surface red; fluctuation was distinguishable in each; it was evident that they had both suppurated, and probable that the violent symptoms depended on their condition. They were freely opened, and in less than an hour the patient had recovered her reason."

Symptoms.—In those rare cases in which we see mammitis as a primary disease, it may be differentiated from inflammation of the tubes and follicles by the following signs:

(*a.*) There are ordinarily no rigors seen in the beginning.

(*b.*) The induration is not so localized.

(*c.*) There is much less pain.

(*d.*) There is greater tendency to suppuration.

(*e.*) * There is more external redness.

(*f.*) There is no pain in lactation.

(*g.*) There is no obstruction to the lacteal flow.

When, as is generally the case, mammitis is a disease secondary to lacteal engorgement, we have these symptoms in connection with those dependent on that condition.

Means of Preventing Mammary Abscess.—Always make it a rule, in visiting a female who has been recently delivered, to *examine the state of the breasts*, at each visit, or at any rate, at each visit subsequent to that made on the third day, and previous to that of the ninth.

If trouble is pending, you will generally find evidence of it upon one of these six examinations. When you discover the existence of

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* Dewees says just the contrary, but my statement agrees with those of Velpeau, Ramsbotham, and others.

any symptom which presages mammitis, never leave its treatment to the nurse, but take the management of the case into your own hands, and allow of no experiments, no suggestions, no interference, any more than you would if the patient's lung or liver, instead of her breast, were inflamed. Do not underrate the results which may accrue from your neglect; I have seen many a lady who dreaded mammary abscess much more than she did the pains and dangers of parturition.

You will, in the course of practice, too, find many an one who will suffer the penalty of confiding to the empirical treatment of an ignorant, uneducated nurse, (trying, one after another, all the plasters, unguents and lotions which every nurse has found to prove specific in her experience,) until, too late, she informs her physician of her trouble, states with evident surprise that she has been rapidly getting worse under treatment which, in the nurse's hands, had worked such miracles before, and prays him for that relief which it is now out of his power to give, in preventing an abscess which has already formed.

I am careful to guard you upon this point, because many nurses seem to regard the management of the breasts as their especial prerogative, and to believe that while they deferred to the doctor in his proper province, the conduct of the labor, in the cure of the breasts and the baby, his skill is entirely dwarfed by a comparison with theirs. This is not singular, but what strikes me as wonderful is, that many physicians seem to agree with them.

Let me suppose that you are called to a lady who, during her first promenade after confinement, has been caught in a shower, or exposed to a draught of cold air; and who has just after had a chill, followed by febrile action; and that, upon examination, you find a hard, irregular, painful tumor in one of her breasts, that the flow of milk is very much diminished, and that suction produces pain. What indications would present themselves for fulfillment regarding this, as you would do, as an example of inflammation of the tubes and follicles; of the gland-structure proper?

They would be, 1st. To quiet the catarrh, which has affected the ducts and follicles.

2d. To prevent accumulation of milk.

3d. To diminish vascular supply to the breasts, and equalize and moderate the general circulation.

The first indication may be met by refrigerant applications to the breast, and none has gained so great a popularity as a mixture of vinegar and water. Simple as this is, it answers the purpose admirably; but for it to act as it should do, as an evaporating lotion, it should be

frequently renewed; for even if applied cold, it very soon takes upon itself the characters and functions of a fomentation, rapidly absorbing warmth from the heated breast.

It is really curious to see how this simple prescription, like so many others, has worked its way down to our times from remote periods. Paulus Ægineta "squeezed a soft sponge out of tepid oxycrate, applied to the breasts, and bound it on in a proper form, (Syd. Soc. Ed., Vol. I., p. 504;) Moschion, a cotemporary of Nero, advises vinegar and water; Van Swieten, in his commentaries, speaks highly of Moschion's method; and Dr. Gilmour accuses Dewees of gleaning the hint from these ancient sources, and not accrediting them with the same. I do not myself believe that this answers any better purpose than a cloth soaked in cold water, and repeatedly renewed.

To fulfill the second indication, let the breast be gently rubbed towards the nipple with olive oil, and the follicles be gently squeezed while this is being done, so as to force the imprisoned milk through the tubes, or to stimulate the absorbents to its removal. (Of this method of evacuating the breasts I will speak further anon.) If the milk cannot be thus removed, it must be done by the child, a pump, or, what is still better, by the mouth of the nurse.

For the accomplishment of the third indication, let the bowels be freely acted upon, and the heart's action reduced, by a saline cathartic, combined with a direct sedative; as in the following prescription:

℞.—Sulphatis magnesiæ, . .	℥iss.	
Tr. Aconiti radicis, (Fleming,)	♏vi.	
Antimonii et potass. tart., .	gr. $\frac{1}{4}$.	
Acidi sulphurici arom., .	♏xxx.	
Aquæ aurantii florum, .	℥iii.	M.

S.—One-third to be taken every three hours, until the bowels are freely acted upon.

This treatment, continued, if necessary, for two or three days, and the patient being confined to strict diet and allowed very little fluid, will generally meet our expectations.

If the case has commenced as one of mammitis, or if that condition has superadded itself to the last, the treatment should differ somewhat. As a primary disease, however, I believe that you will rarely meet with mammitis; it is almost always secondary to the condition just mentioned, to lacteal engorgement, or to some other. Should it be found to exist either as a primary or secondary affection, the indications, although very similar to those in the last case, will be best accomplished by other means.

A number of leeches should be applied to the breast, or just below it, the bleeding from their bites freely encouraged, and after their removal, a cold saturnine lotion applied, which should be carefully renewed whenever it becomes warm.

I am not in the habit of recommending to you special prescriptions, and that which I subjoin as a local application, I do not insist upon at all, but merely offer it as an example of the class which will be appropriate. The indication is the important point, and if you know of any better means of fulfilling it, employ them.

℞.—Acetat. plumbi,	ʒi.	
Tr. opii acetat.,	℥ii.	
Aceti,		
Aquæ,	ää ℥vii.	M.

To be applied cold, and renewed whenever it becomes warm.

The bowels should then be freely moved by the prescription given, or any other which may be preferred, and a febrifuge and refrigerant employed—such, for instance, as the following:

℞.—Potassæ nitratis,	ʒii.	
Antimonii et potass. tart.,	gr. i.	
Tr. verat. viride,	♏l.	
Aquæ,	℥iii.	M.

A dessert-spoonful every three hours while there is fever.

In addition to this, the milk should be carefully drawn by suction, or a pump. While in the case of inflammation of the ducts, rubbing will be better than suction for the evacuation of the milk, here the latter will be found far preferable to the former, which is liable to injure the areolar tissue, which is already in a state of disease. And last, (but not least,) do not let the inflamed organ hang and drag upon that very tissue which is the seat of the inflammation, for its support; but pass a broad band of adhesive plaster beneath it, and carry it up over the shoulders, to act as a sling. A handkerchief will answer the same purpose, but not near as perfectly. This last direction is one of no slight importance.

So much, at present, for the management of a commencing case of mammitis; that is, of a case in the first stage of inflammation. Before proceeding to speak of the treatment of its second and third stages, it is my desire to draw your attention to the treatment of one of its causes, which is of too great frequency and too much importance to be passed unnoticed longer. I allude to lacteal engorgement, occurring as a concomitant of congestion, or as productive of it.

In this condition, if active congestion have not occurred, our chief

m is to prevent it by prompt measures, for it will soon appear if not thus warded off.

The indications presenting themselves in such a state are:

1st. To evacuate the distended follicles.

2nd. To diminish the amount of secretion.

3rd. To lessen vascular supply to the breasts.

As soon as you recognize the state of lacteal engorgement, attend to the first indication by having the breasts drawn by the child, a pump, or the nurse, and having them well rubbed towards the nipple, the hands being covered with olive oil or glycerine. The oil is used merely to facilitate the rubbing, and not for any specific action of its own; therefore, do not use oil medicated with camphor or any other substance, which may bring out a very disagreeable eruption, render the child averse to taking the nipple, and make the application of leeches, which we may subsequently wish to apply, almost impossible, on account of their repugnance to the medicinal substance used. The rubbing should be practiced for fifteen minutes out of every two or three hours, should the breasts fill in that time; and although at first painful and disagreeable to the patient, it will soon be asked for, and relied upon by her, as a means of relief.

But its practice requires some skill, and a great deal of gentleness and perseverance. You will often have to explain its *modus agendi* to the nurse, and if necessary will do well on the first occasion to perform it yourself. After rubbing for ten minutes sometimes, you will see no flow of milk follow, but at the end of so long a time will often be gratified by the accomplishment of all you desire.

When practiced as it should be, this is one of the most effectual means with which I am acquainted for preventing abscess from this cause, and in the Dublin Lying-in Hospital is (or rather was in 1853) relied upon almost to the exclusion of all other local means.

At this time, that is, before any inflammatory action has been set up in the areolar tissue or follicles, and when simple lacteal engorgement exists, warm applications should be made to the breasts, one of the best of which is a sponge or bit of linen, soaked in warm water and covered by a cap of oil silk, made to fit the breast.

But you may ask, Why apply cold in the two diseased states just mentioned, and warmth here? The reason is this: in the first stage of inflammation the vessels are dilating and becoming choked with blood, and you should do all in your power to brace them up, give them tone, and prevent the morbid process. Here, however, you have no such state; you wish simply to soothe the tense organ, and to relax

any contraction which may exist in the milk-ducts. It is a fact well recognized by anatomists that the milk-ducts, at their termination in the nipple, are surrounded by contractile or dartoid fibres, and it is highly probable that these, under irritant influences, spasmodically contract, and prevent the escape of milk. The American editor of Ramsbotham's System of Obstetrics expresses such a view on p. 481 of that work, and I have seen several things which lead me to the same belief. Now, warmth relaxes this and any other vital contraction which may exist in these ducts, and thus favors excretion.

To fulfill the second indication, viz., the diminution of the secretion of the breast, act freely upon the alimentary canal, restrict the diet, give little fluid, employ antigalactics, and resort to compression of the gland.

The two first of these methods for producing the desired end are very valuable ones, but will require no further allusion than that which has already been made to them in this lecture, and we proceed to consider at once those antigalactics upon which we can rely. The first is iodide of potassium, given in full dose; the second is the extract of belladonna painted around the nipple. These two remedies have found great favor with the vast majority of those who have tried them, and although I have seen them both fail in checking or even in diminishing the secretion, I have much oftener in my own practice observed that benefit resulted from their use. I therefore advise you to treasure them in your memories, as means which will prove most serviceable in time of need.

The third indication will be fulfilled by means already mentioned in the treatment of the first stage.

Do all these means ever fail when properly and perseveringly applied; and does the obstetrician ever see his best-directed efforts end in disappointment? I regret to answer in the affirmative, but at the same time express the belief that such failures will be very rare, unless he has to deal with a very unmanageable patient, or with a case which had advanced before he saw it to the second stage of mammitis. Should this stage have arrived, however, before the case came under his care, or in spite of his efforts to ward it off by checking the first stage at its inception, he is by no means without resources which may result in prevention of the third stage, which is the greatest misfortune that he fears under the circumstances.

Treatment of the Second Stage of Mammitis.—The second stage of mammitis consists in an effusion of lymph into the areolar tissue of the mamma; may be recognized by great hardness, pain, tumefaction, red-

ness and heat, and may well be dreaded as the precursor of abscess, unless its progress is checked and suppuration prevented.

All those means which have been detailed as applicable to the disease in its first stage, are to be persevered in in this; but should we find that, in spite of them, the case progresses steadily towards the dreaded result of abscess, no time should be lost, but pressure should be established, with a well-founded hope of successful prevention.

It is now about fifteen years since Trousseau and Contour published an essay on the treatment of mammary abscess, by compression, bringing the subject prominently before the profession. It was not original with them, however, for according to Dr. Jas. Gilmour, of Liverpool, in an excellent article on this subject in the *Lancet*, already alluded to, it may be traced to Heister, and its use may be found alluded to in the works of Pearson, Smellie, and Cooper. In this city I know of no one who has so systematically resorted to this means as Dr. S. Conant Foster, who published an excellent article upon it some four years ago in the *New York Journal of Medicine.*

In obstinate lacteal engorgements it is very serviceable; even after pus has begun to form, it relieves pain, and although it does not prevent the coming abscess, seems to prevent the passage of the pyogenic process to larger parts of the organ; but in the second stage of mammitis, where engorgement is ending in effusion of lymph, it is certainly one of the greatest boons with which either patient or accoucheur could meet.

I have myself repeatedly employed it, and never without being not only pleased, but surprised by its results. Equable pressure overcomes the tendency to congestion, keeps the distended follicles closed, and stimulates the absorbents to great activity. Do not let any theoretical objections prevent you from employing this means, and believe me that you will find it one of the most precious resources which you can bring to your aid.

The means by which pressure is best effected is by adhesive straps from 15 to 16 inches in length, and from one to two inches broad. Suppose, by way of illustration, that the right breast is to be compressed, let the end of the first strip be fixed in the right axilla, and then being drawn tight, let it be carried over the lower border of the breast, and its other end attached to the lower border of the breast on the other side. Then let the second strip be fixed at the upper border of the left breast, and this being firmly drawn over the lower border of the right, or diseased breast, let it be fixed so that its lower

end will be attached to the right side, about three inches below the origin of the first.

These two strips should be longer and wider than those which are to follow, for they are to give support to the organ. Shorter strips may follow these, crossing each other as these have done, until the entire breast is shingled over, as it were, with the compressing covering. The particular arrangement, however, is a matter of secondary importance, as the ingenuity of any one will be sufficient to teach him how to accomplish the desired end. Compress the breast as you like, the principle is what I wish to inculcate. Should you desire a more powerful compressing agent than the straps, a most excellent one is offered you in compressed sponge, as recommended by Dr. Batchelder. Having compressed a piece of sponge by heavy weights, place it on the breast, apply firmly a roller bandage, and through this wet the sponge. Absorbing water, it will soon swell, and give you a powerful, safe, and equable means of compression. By this very ingenious means the hardest tumors will disappear, and the breast be rapidly reduced in its dimensions. The sponges employed may be small and numerous, compressing the different parts of the organ which require such treatment; or one large disk of sponge may be prepared, with a hole for the nipple, which will act upon the entire organ at once.

This was the method employed by Dr. Foster in the cases related in the paper alluded to.

You will often find, in a few hours after pressure has been applied, that a tumid, hot, and painful breast will change its aspect most essentially; and even while the straps, or sponge and bandage, are performing their function, the milk can be drawn by suction, the nipple being of course left uncovered; and the adoption of the plan does not prevent the continuance of other means, as saline cathartics, antigalactis, dieting, &c. Pressure, indeed, only takes the place of friction, which has failed us, or which we cannot employ, from the restiveness of our patient, or the pain which it induces after mammitis has been alighted.

When pus has formed, nothing more can be done than to encourage its discharge, and for this purpose a soft poultice should be applied. So soon as the abscess shows a tendency to point, let it be evacuated, and then let the whole breast be supported by strapping, only a space around the opening being left free for the application of a small and light poultice. The straps, now applied, will prevent the formation of sinuses, will force out all the contents of the abscess, and cause a rapid absorption of surrounding effusion.

Should obstinate sinuses have formed, which will not yield to the means mentioned, let them be dilated by sponge-tents, injected with dilute Tr. of iodine, or with simple warm water, and firmly compressed by means of compressed sponge and a roller bandage.

In reference to these and other chronic purulent discharges from the breasts, I must guard you against the prolonged use of poultices. Like other very useful means, they are often abused; and if persevered in after the proper time, will tend to weaken the diseased tissues, and encourage the continuance of the exhausting discharge.

In the medical journals of the day you will see many kinds of treatment extolled, and the proof of their efficacy which will be adduced will be the fact of their having prevented mammary abscess in women who have been delivered of still-born children, and have not nursed. Now, this reasoning is fallacious, for it is very rare that abscess occurs in such cases, and the prevention is entirely imaginary; the appearances of threatened abscess having vanished "*post hoc,*" but not "*propter hoc.*" I have never seen an abscess of this kind occur in a woman who had not nursed, although I know that they sometimes do so.

In concluding, I will give you a *résumé* of the means to be adopted for the checking of a *commencing* mammitis, without which no abscess can form, but which is very sure to appear as a secondary result of uncontrolled lacteal and sanguineous engorgement.

1st. Evacuate the inflamed breast by the breast-pump, or by suction by the child or nurse, the last being decidedly the best method.

2d. Diminish vascular supply, by saline cathartics, nauseants, direct sedatives, topical bleeding, and cold applications.

3d. Diminish lacteal secretion by strict diet and antigalactics.

4th. Aid in the accomplishment of all these ends, and at the same time cause an absorption of effused lymph and serum, by firm and equable compression.

5th. Never let the inflamed organ hang, but always support it by means of a long and broad band of adhesive plaster passing nearly around the body, and thence under the breast.

6th. Avoid poultices and warm fomentations.

The Physiology of the Circulation. A Course of Lectures delivered at the College of Physicians and Surgeons, New York, in the Fall Term of 1859. By JOHN C. DALTON, JR., M.D., Professor of Physiology and Microscopic Anatomy.

LECTURE VIII.

(OCTOBER 4.)

Endosmosis and Exosmosis—Experiment with Endosmometer—Circumstances Regulating Endosmosis—Condition of the Membrane—Constitution of the Liquids—Position of the Membrane—Temperature—Pressure—Endosmosis of Water towards Albumen—Experiment—Nature of Endosmosis—Effect of Renovation of Liquids by a Current—Experiment—Absorption of Liquids from Areolar Tissue—Effect of Stopping Circulation—Experiment—Exudation of Ingredients of the Blood—In Health—In Disease—Rapidity of Endosmosis and Transudation in Living Animals—Experiment—Absorption and Elimination of Poisonous and Medicinal Substances.

Heretofore, gentlemen, we have been occupied with the physical and mechanical functions performed by the circulatory apparatus. We have studied the movements of the heart, the texture and properties of the vessels, and the motion of the circulating current in different parts of the vascular system. We now approach, however, a different order of phenomena—those which are more purely physiological in their nature, and which are at least equally important with the others, in the part which they play in the vital processes of nutrition.

We shall begin to-day with the study of those curious phenomena, exhibited by the animal tissues, which are known as *endosmosis* and *exosmosis*.

These phenomena depend upon the property of two different liquids which are separated by an animal membrane, of passing through its substance, and mingling with each other in certain proportions.

If we take, for example, a solution of salt and an equal quantity of distilled water, and inclose them in a glass vessel with a fresh animal membrane stretched between, so that there is no direct communication from one liquid to the other, the two liquids being in contact with opposite sides of the membrane, it is found after a while that the liquids have become mixed, to a certain extent, with each other. A part of the salt will have passed into the distilled water, giving it a saline taste; and a part of the water will have passed into the saline solution, making it more dilute than before. If the quantities of the two liquids, which have become so transferred, be measured, it will be found that a comparatively large quantity of the water has passed into the saline solution, and a comparatively small quantity of the saline

solution has passed out into the water. This abundant passage of the water, through the membrane, to the salt, is called *endosmosis;* and the more scanty passage of the salt outward to the water is called *exosmosis.*

It is evident, therefore, that the animal membrane has not prevented the mixture of the two fluids. It may even be seen, by further examination, that it actually causes the mixture to take place.

I have just said that when the water and the solution of salt are placed in contact with an animal membrane and pass through it, the water passes inward to the salt more rapidly than the salt passes outward to the water. The consequence is, that an accumulation soon begins to show itself on the side of the salt. The saline solution is increased in volume and diluted, while the water is diminished in volume, and acquires a saline ingredient.

This accumulation of fluid on one side of the membrane takes place with many other substances when used for a similar experiment.

Here, for example, is an apparatus which will show both the passage of a liquid by endosmosis through an animal membrane, and its accumulation on the opposite side.

It consists of a glass vessel, like an inverted funnel, wide at the bottom and narrow at the top. The bottom of the vessel is closed by a piece of the mucous membrane of the ox's bladder, which is stretched tightly over its edge and secured by a ligature. From the top there rises a very narrow, upright glass tube, several inches in height, and curved over at its upper extremity, so that its orifice points downward.

Three hours ago this vessel was filled with a strong solution of sugar, up to the commencement of the upright tube, and then placed, with its wide extremity downward, in a vase of distilled water, the membrane being supported in a horizontal position by a perforated metallic plate.

Since then, the water has been constantly passing by endosmosis, through the membrane, into the endosmometer. The level of the saccharine solution has gradually risen in the upright tube, until it has filled its entire length, and is now, you observe, constantly dripping from its superior extremity. A certain amount of the sugar has also passed out into the water, but this is in such small quantity, comparatively speaking, that an incessant accumulation has taken place, on the inside of the membranous septum.

As the saccharine solution, therefore, is much heavier than the water, the action of endosmosis has caused this accumulation to take place against the force of gravity, and has raised a column of the denser fluid several inches above its former level.

As the saccharine solution also continues to drop from the end of the upright tube back again into the vase of water, a steady circulation of fluid is kept up by the same force. The water still passes through the membrane, and accumulates in the endosmometer; but as this is already full of fluid, the surplus immediately falls back into the outside vase, and thus a current is established, which will go on until the two liquids have become intimately mingled.

Now, there are various conditions that influence the extent and rapidity with which this phenomenon of endosmosis takes place.

The first is the *freshness of the membrane itself.* This is an indispensable requisite for the success of the experiment. A membrane that has been dried and moistened again, or one that has begun to putrefy, will not produce the desired effect. It has been found that if the membrane of the endosmometer be allowed to remain and soak in the fluids, after the column has risen to a certain height in the upright tube, it begins to descend as soon as putrefaction commences, and the two liquids finally sink again to the same level.

The next condition is the *extent of contact* between the membrane and the two liquids. The greater the extent of this contact, the more rapid and forcible is the current of endosmosis. An endosmometer with a wide mouth will produce more effect than with a narrow one, though the volume of the liquid contained in it be the same in both instances. The action takes place at the surface of the membrane, and is proportionate to its extent.

Another very important circumstance is the *constitution of the two liquids*, and their relation to each other. As a general thing, if we use water and a saline solution in our experiments, endosmosis is more active, the more concentrated is the solution in the endosmometer. A larger quantity of water will pass inward toward a dense solution than toward one which is already dilute. But the force of endosmosis varies with different fluids, even when they are of the same density. Dutrochet, who has written a great deal that is valuable on this subject, measured the force with which water passed through the mucous membrane of an ox-bladder into different solutions of the same density. He found that the force varies with different substances, as follows:

Endosmosis of	water, with	a solution	of albumen	12
"	"	"	sugar	11
"	"	"	gum	5
"	"	"	gelatine	3

The *position of the membrane* also makes a difference. With some fluids, endosmosis is more rapid when the membrane has its mucou

surface in contact with the dense solution, and its dissected surface in contact with the water. With other substances the most favorable position is the reverse. Matteucci found that, in using the mucous membrane of the ox-bladder with water and a solution of sugar, if the mucous surface of the membrane were in contact with the saccharine solution, the liquid rose in the endosmometer between four and five inches. But if the same surface were turned outward toward the water, the column of fluid was less than three inches in height. Different membranes also act with different degrees of force. The effect produced is not the same with the integument of different animals, nor with mucous membranes taken from different parts of the body.

Generally speaking, endosmosis is more active when the *temperature* is moderately elevated. Dutrochet noticed that an endosmometer, containing a solution of gum, absorbed only one volume of water at a temperature of 32° Fahr., but absorbed three volumes at a temperature a little above 90°. Variations of temperature will sometimes even change the direction of the endosmosis altogether, particularly with dilute solutions of hydrochloric acid.

Finally, the *pressure* which is exerted upon the fluids and the membrane favors their endosmosis. Fluids that pass slowly under a low pressure will pass more rapidly with a higher one. Different liquids, too, require different degrees of pressure to make them pass the same membrane. Liebig has measured the pressure required for several different liquids, in order to make them pass through the same membrane. He found that this pressure was:

For alcohol	52	inches	of mercury.
For oil	37	"	"
For solution of salt	20	"	"
For water	13	"	"

You see, then, that in our own experiment, with the water and solution of sugar, the force of endosmosis was very great. For the pressure of the saccharine solution upon the upper surface of the membrane was much greater than that of the water below; and yet the water passed through the membrane against this pressure, and accumulated on its upper surface.

There are some cases in which endosmosis takes place without being accompanied by exosmosis. This occurs, for example, when we use water and albumen as the two liquids. For while water freely passes in through the animal membrane, the albumen does not pass out. Here is an egg, with an opening made in the large end of the shell by

which the shell-membrane is exposed. Half an hour ago the egg was placed in a goblet of water, and endosmosis has taken place to such an extent that you now see the shell-membrane distended, and protruding from the opening in the shell. The water has passed into the egg and diluted the albumen, but there is no albumen in the water of the goblet, which retains its clear and transparent appearance. The membrane, therefore, has allowed the water to mix with the albumen in the egg, but has not allowed the albumen to mix with the water in the goblet.

An hour or two later, the accumulation in the egg would have increased to such an extent that the shell-membrane would have been ruptured by its own distention.

This has actually happened in these two other specimens, which have remained longer in water than the first. Here, you see, the shell-membrane has given way, and the albumen and the water are now mingled in the glass vessel.

Now, gentlemen, we have gone through with the principal phenomena of endosmosis, and have studied the most important conditions which regulate its action. In the next place, let us see what is the nature of this process, and what are the essential properties upon which it depends.

In the first place, endosmosis is not a phenomenon dependent on the simple force of diffusion or admixture of two different liquids.

It is true that the two liquids become mingled together in all the examples of endosmosis which I have mentioned. The activity of this mixture, even, depends very much, as I stated before, upon the difference in constitution of the two liquids. With water and a saline solution, for instance, the stronger the solution of salt, the more rapid is the endosmosis of the water. And if two solutions of salt be used, with a membranous septum between them, endosmosis takes place from the weaker solution to the stronger, and is proportionate in activity to the difference in their densities. From this fact, Dutrochet was at first led to believe that the direction of endosmosis was determined by the differenee in density of the two liquids, and that the current of accumulation was always directed from the weaker liquid to the denser. But we now know that this is not the case. For though, with solutions of salt, sugar, and the like, the current of endosmosis is from the lighter to the denser liquid; in other instances, it is the reverse. With water and alcohol, for example, endosmosis takes place, not from the alcohol to the water, but from the water to the alcohol; that is, from the denser liquid to the lighter.

The difference in density of the liquids, therefore, is not the only condition which regulates the direction of the endosmotic current.

The truth is, the process of endosmosis does not depend principally upon the attraction of the two liquids for each other, but upon *the attraction of the animal membrane for the two liquids.* The membrane is not a passive filter through which the liquids mingle, but it is the active agent which determines their passage. The membrane has the power of absorbing liquids, and of taking them up into its own substance. This power of absorption, flowing to the membrane, depends upon the organic or albuminous substance of which it is composed; and, with different animal substances, the power of absorption is different. The tissue of cartilage, for example, will absorb more water, weight for weight, than that of the tendons; and the tissue of the cornea will absorb nearly twice as much as that of cartilage.

Beside, the power of absorption of an animal membrane is different for different liquids. Nearly all animal membranes absorb pure water more freely than a solution of salt. If a membrane, partly dried, be placed in a saturated saline solution, it will absorb the water in larger proportion than the salt, and a part of the salt will, therefore, be deposited in the form of crystals on the surface of the membrane.

Oily matters, on the other hand, are usually absorbed less readily than either water or saline solutions.

Chevreuil has investigated the absorbent power of different animal substances for different liquids, by taking definite quantities of the animal substance and immersing for twenty-four hours in the different liquids. At the end of that time, the substance was removed and weighed. Its increase in weight showed the quantity of liquid which it had absorbed. The results which were obtained are given in the following table:

		Water.	*Saline Solution.*	*Oil.*
100 parts of Cartilage,	absorb in 24 hours,	231 parts.	125 parts.	
" Tendon,		178 "	114 "	8.6 parts.
" Elastic Ligament,		148 "	30 "	7.2 "
" Cornea,		461 "	370 "	9.1 "
" Cartilaginous Ligament,		319 "		3.2 "
" Dried Fibrin,		301 "	154 "	

You see, therefore, that the same substance will take up different quantities of water, saline solutions, and oil.

Now, when an animal membrane is placed in contact with two different liquids, it absorbs one of them more abundantly than the other; and that which is absorbed in greatest quantity is also diffused most abundantly into the liquid on the opposite side of the membrane. A rapid endosmosis takes place in one direction, and a slow exosmosis

in the other. Consequently, the least absorbable fluid increases in volume by the constant admixture of that which is taken up more rapidly.

In our experiments, therefore, an accumulation of fluid took place in the endosmometer, because the animal membrane absorbed the water in greater abundance than the saccharine solution.

But in such an apparatus as this, though endosmosis begins rapidly, it soon becomes less active. For the longer it is in operation, the more the saccharine solution is diluted by the addition of water, and the water in the outside vase also becomes saccharine by the exosmosis of sugar. After a time, therefore, the two liquids become completely mingled, and similar to each other on both sides of the membrane. Then, of course, the process comes to an end.

Now, if by any means we could renew the water in the outside vase, and keep it constantly pure, endosmosis would go on for a longer time, and with more uniform rapidity. The effect would be still farther heightened if we were to renew the saccharine solution at the same time, and keep it constantly concentrated. This might be done by establishing a current on one or both sides of the membrane, so that as fast as either fluid became contaminated by admixture with the other, it would be carried away by the stream, and replaced by a fresh supply. Then, endosmosis would go on with undiminished vigor, so long as the membrane retained its absorbent powers.

It is for this reason a current or continuous movement of the fluids favors the process of endosmosis.

The effect of such a current may be seen very well in this apparatus, which is similar to that employed by Matteucci for the same purpose. I have here a jar, or reservoir of water, with an opening and stopcock at the bottom. To the stopcock is attached a long membranous tube, (the mucous membrane of the rabbit's intestine,) which rests in a shallow vase, with its lower extremity hanging over the edge. On opening the stopcock, the water passes through the intestine from the reservoir, and runs from its lower extremity. By receiving the water as it runs from the intestine, in a goblet containing a solution of litmus, you see that the solution is only diluted, and not changed in color.

I now pour into the shallow vase, outside the intestine, water acidulated with hydrochloric acid. The acid passes by endosmosis through the walls of the intestine, to its interior; and, the endosmosis being hastened by the current of running water in the intestine, this imme-

diately begins to show an acid reaction, for you see it already reddens the solution of litmus in a very perceptible manner.

The hydrochloric acid, therefore, passed at once through the membranous walls of the intestine, and ran from its lower extremity with the stream of water.

Now, it is on this account that absorption takes place so freely and rapidly in the living body. For here, absorption is performed principally with the assistance of the blood-vessels and the circulating blood. All the tissues, it is true, take part in it, and are more or less permeable to watery and serous fluids. But wherever the blood-vessels ramify, and the blood circulates, the vessels immediately give up the fluids, which they absorb, to the blood, and the circulating current at once carries them away to distant parts of the system, allowing an equally active absorption of the remainder. The rapidity of absorption, therefore, depends very much on the condition of the circulation. Where the vessels are abundant, and the circulation rapid, absorption takes place quickly. Where the vessels are scanty and the movement of the blood sluggish, absorption is performed slowly.

If the circulation be altogether arrested in any part of the body, absorption in that part may be entirely suspended, or at least, may take place so slowly as not to produce any visible effect.

This effect may be seen, for example, in the very different rapidity with which certain poisons are absorbed when the circulation is going on, and when it is suspended.

I have here two rabbits of the same size and vigor, and of similar external appearance. In one of them, I have already exposed the blood-vessels of the left hind leg, and placed a ligature loosely around them. I will now draw the ligature tightly round the vessels—both arteries and veins—so as to stop the circulation entirely in this limb, while it goes on as usual in other parts of the body. I now make an opening in the skin, and by the aid of a small syringe, inject into the subcutaneous areolar tissue of this leg a small quantity of the extract of nux vomica, dissolved in water. Afterward, the orifice in the skin is tied, so that the injected fluid may not escape.

I now make a similar opening in the hind leg of the other rabbit, and inject the same quantity of the solution of nux vomica. We will now let the two animals remain, and see which of them is affected first.

In the mean time, I will say a word or two as to the *mechanism* by which a fluid, in endosmosis, passes through an animal membrane. Understand, if you please, that this process has nothing to do with capillary attraction, or "capillarity." It is true, that fluids are taken up by

the force of capillary attraction, by narrow tubes, by finely-powdered glass or sand, and by nearly all spongy or porous bodies. But this kind of absorption is only a mechanical adhesion of the fluid to the walls of minute tubes and cavities. The fluid is simply entangled in the meshes of the porous body. In the case of animal membranes, however, the force with which they imbibe watery fluids is of quite a different nature. Here, the fluid penetrates the tissue of the membrane by a kind of chemical combination. It unites, molecule by molecule, with the substance by which it is composed, so that the water, after it has been imbibed by a membrane, actually forms a part of its texture, and is in a state of intimate union with its other ingredients.

It is in this way that all absorption and exudation take place through animal membranes. The old anatomists had no idea of such a process as this. They imagined that the absorbed fluids were taken up by the "open mouths" of absorbent vessels, and that exhalation was also accomplished by the "open mouths" of exhalent vessels. Nobody ever saw these open mouths of the exhalent and absorbent vessels; for, in fact, they had no existence. The vascular system is everywhere a closed circuit. But the anatomists in former times took it for granted that there were such, merely because they could not understand how a fluid could penetrate a membrane except by means of open orifices.

Now, we know that there are no openings in the walls of the vessels, nor in the substance of the tissues, which are visible to the microscope. We have no reason for thinking that the tissues are "porous," or that they can act upon fluids by capillary attraction. On the contrary, absorption takes place with tissues which are homogeneous, like cartilage, as well as those which are fibrous or laminated in structure. It is the animal substance of which the tissues are composed which absorbs the water in endosmosis. The albuminoid substances all possess this property in an eminent degree. The water in absorption is condensed by the solid albuminoid ingredients of the tissue, just as solid substances themselves may be dissolved and liquefied by water. The watery fluids, therefore, which pass into and through a membrane are for the time intimately united with its substance, and are not simply entangled in the meshes of a fibrous network.

Now, gentlemen, you see that the second rabbit, which was inoculated with nux vomica, suddenly shows symptoms of poisoning. The poison has been taken up by absorption by the blood-vessels, and has

at last accumulated in the circulation so as to produce its specific effects. The animal is already in violent convulsions, and will probably die in from half a minute to a minute. The lips and tongue are pallid and purple, showing the suspension of respiration. Now, the rigidity of the limbs is passing off, and the muscles relax; but respiration, you see, does not recommence. The pupil is dilated. The animal is dead. But the first rabbit, which was inoculated before the others, does not yet show the least sign of poisoning. No doubt the poison is absorbed in this animal also. It is imbibed by the tissues of the leg, and by the lymphatics, and may even thus find its way at last into the circulatory system. But owing to the ligature of the vessels and the stoppage of the local current, it is taken up very slowly; and as fast as it gains entrance into the blood it is used up and destroyed in the general circulation.

In an animal, therefore, when the blood-vessels of a limb have been tied, the poison which is injected into the part is taken up piecemeal, and is immediately decomposed, so that no visible effect is produced. But if the movement of the blood be going on, the poison is absorbed so rapidly that it soon accumulates in the blood, and destroys the life of the animal.

It is in this way, gentlemen, that all absorption in the living body takes place. The fluids which bathe the mucous membranes, or which are infiltrated into the tissues, pass by endosmosis through the walls of the vessels, and enter the current of the circulating blood. In many instances, they may afterward be detected in the blood by chemical tests. In others, they act upon particular organs, to which they are carried by the current of the circulation. The larger the absorbing surface, therefore, the more rapidly absorption is accomplished; in the same way as in experiments with an endosmometer, endosmosis occurs more rapidly the greater the extent of contact between the fluids and the animal membrane.

The same thing is true of exudation as of absorption. For in exudation, the fluids pass out by exosmosis through the walls of the vessels; and their passage is subject to the same conditions as when they transude in a contrary direction.

I have already stated that albumen is not endosmotic. That is, it does not transude through animal membranes, though water or other fluids may pass freely either inward or outward. In the circulation, accordingly, we find that the blood-vessels are full of a highly albuminous liquid, which passes to all regions of the body in the movement of the blood. But this albumen does not transude through the vessels,

and is not to be found, in a state of health, in any of the secreted or excreted fluids. It is retained in the circulation, while various other of the ingredients of the blood, such as water, saline matters, &c., are constantly exhaled, and discharged with the secretions.

The phenomena of endosmosis and exosmosis, however, as we have seen, are regulated, to a very great extent, by the pressure which is exerted upon the liquids and the membrane. A substance which passes but slowly under a low pressure, may pass much more rapidly if the force be increased. Oil, for example, which is not endosmotic under ordinary circumstances, may be made to transude by a pressure of thirty-seven inches of mercury, or a little more than one atmosphere.

The same thing is true of albumen. Albumen does not pass out through the walls of the vessels under the ordinary pressure of the circulation. But if this pressure be increased by any means, the serous part of the blood may be exuded, and an albuminous liquid will then be exhaled with the secretions, or infiltrated into the tissues.

We often see this, whenever the circulation is impeded by any obstruction to the return of the blood through the veins. If the femoral vein be compressed by a tumor, or constricted by a ligature, or obstructed by the presence of a coagulum, the pressure of the blood in the lower extremity is immediately increased, and serous effusions take place into the areolar tissue of the part. Compression of the renal veins by the pregnant uterus, or by any abdominal tumor, will cause congestion of the kidney and exudation of albumen into the urinary passages. This is undoubtedly the explanation of many cases of temporary albuminuria, occurring in pregnant women. After delivery, the renal veins are relieved from pressure, and the unnatural symptom accordingly disappears.

Beside pressure, too, there are other conditions, you remember, regulating the endosmosis and exosmosis of liquids.

Among the most important is the *physical and chemical constitution* of the liquids on the one hand, and the membrane on the other. Now in certain diseased conditions, either one or both of these suffer an alteration. In inflammation, for example, the nutritive processes are deranged, and as the tissues have no longer their natural constitution, we find that the ingredients of the blood transude in unnatural proportions. Serous and fibrinous exudations take place into the surrounding parts; and the blood, accordingly, becomes impoverished or contaminated by circulating through the vessels of the diseased organ.

So much, gentlemen, for the ordinary phenomena of endosmosis,

and the conditions which regulate and modify them. Now let me call your attention to certain facts which show the rapidity with which endosmosis takes place in the animal tissues.

When carefully investigated, this rapidity is found to be very great. M. Gosselin, of the Academy of Surgery, at Paris, reported, a few years ago, some very important and valuable experiments bearing on this point. Most of them were performed upon the cornea and other tissues of the eyeball, in order to ascertain their absorbent power in the living animal.

M. Gosselin dropped upon the cornea of the left eye of a living rabbit a watery solution of iodide of potassium, ninety grains to the ounce. At the end of seven minutes, he extracted both eyeballs from the animal, and examined first the left and then the right eye, in the following manner: The surfaces of the eyeballs were first washed with acidulated water; and the washings, tested with a solution of starch, presented no trace of the presence of iodine. None of the iodine, therefore, remained adherent to the external surface of the eyeball. The cornea was then detached, dried on both sides with a bit of linen, cut in pieces, bruised, and macerated for a short time, in a capsule with distilled water. This fluid, tested by starch and nitric acid, then showed a distinct blue coloration of iodide of starch.

The crystalline, vitreous body, and iris, of the same eye, examined in the same way, did not give so distinct a reaction. The opposite eye, subjected to similar tests, did not show the least trace of the presence of iodine.

In another experiment, the eye was extracted eleven minutes after the application of the solution of iodine to the conjunctiva. The cornea, aqueous humor, iris, sclerotic, crystalline, and vitreous body, all showed very evident indications of the presence of iodine; while in the opposite eye, no such indications were found in any part.

In these instances, the solution of iodide of potassium had passed, by endosmosis, into the substance of the cornea in seven minutes, and in eleven minutes had penetrated through it into all the textures of the eyeball. In other experiments, the cornea and aqueous humor both contained iodine in six minutes, four minutes, and three minutes after its external application; and in another still, the cornea presented unmistakable indications of its presence at the end of a minute and a half.

Now, in these experiments, it is plain that the iodine actually passed into the deeper portions of the eyeball by imbibition and endosmosis, and was not transported from the conjunctiva by the vessels of the

general circulation; for the tissues of the opposite eye, examined at the same time, showed no trace of its presence.

It is in this way that a solution of belladonna, when dropped upon the conjunctiva, penetrates the cornea, is taken up by the aqueous humor, and acts directly and locally upon the muscular fibres of the iris. For it does not affect the system at large, nor produce any alteration in the eye of the opposite side. M. Gosselin applied a solution of sulphate of atropine to both the eyes of two rabbits. Half an hour afterward, the pupils were dilated. Three-quarters of an hour later, the aqueous humor was collected, by puncturing the cornea with a trocar; and this aqueous humor, dropped upon the left eye of a cat, produced dilatation and immobility of the pupil, on that side, in half an hour. These facts show, therefore, that the aqueous humor of the affected eye actually contains atropine, which it absorbs from without, through the cornea.

But, in these cases, the surfaces with which the fluids were brought in contact were very small in extent. In the natural processes of absorption and exhalation, as they go on in the living body, the rapidity of endosmosis is much greater; for the anatomical relations of the animal fluids and the absorbent membranes are very much more favorable.

Recollect, if you please, the distribution of the blood-vessels on the one hand, and the structure of the glandular organs on the other.

The arteries, by their repeated subdivision and ramification, become increased in number as fast as they are reduced in size; and finally, when they break up into capillaries, the subdivision of the circulating current is excessively minute. It is estimated, as I have already told you, that the united calibre of all the capillaries in the body is some three or four hundred times that of the arteries; so that, in them, a comparatively small quantity of blood is spread out over an enormous space, and brought into contact with a great extent of membranous surface.

At the same time, the follicles and ducts of the glandular organs are almost equally divided and disseminated. Each lobule of a salivary gland, for example, consists of a vast number of minute follicles or sacs, usually not more than $\frac{1}{500}$ of an inch in diameter, terminating in little ducts, which successively unite with each other, until they at last form the excretory tube of the entire gland. The structure of the lung is similar to this in its general plan; and so great is the involution of surface produced by this arrangement, that the whole extent of the pulmonary membrane is usually estimated at not less than

fourteen hundred square feet. It is certainly not less for the secreting glandular organs, in proportion to their size.

Between all these minute follicles and ducts, the blood-vessels penetrate and ramify; and the capillaries and follicles of the gland are thus brought into the most intimate possible relation. At the same time, if we remember that the blood is constantly renovated in the vessels by the current of the circulation, we shall have little difficulty in understanding that the passage of fluids from the gland to the blood-vessels, or from the blood-vessels to the gland, may take place with an almost immeasurable rapidity.

It has been found, for example, that iodide of potassium, when introduced into the blood, passes out by the secreting surface of the salivary glands, almost instantaneously.

In this dog, a silver canula has been inserted into the duct of the left parotid gland. On injecting a little vinegar into the mouth, the secretion of the gland, as you see, is excited, and the saliva runs in drops from the end of the canula. This saliva, when tested with starch and nitric acid, does not, of course, show any trace of the presence of iodine.

I now insert into the jugular vein, which has already been exposed in this animal, the nozzle of a syringe, and inject a little iodide of potassium, in solution in water. The injection is already finished, and the animal does not appear to have suffered any injury. If we now again excite the secretion of the parotid, by injecting vinegar into the mouth, as before, and collect the saliva as it runs from the end of the canula, on the addition of starch and nitric acid, it immediately strikes a distinct blue color, showing the presence of iodine in the saliva.

It is with such rapidity that iodine passes out through the glandular tissue of the parotid, when directly introduced into the blood. If introduced into the alimentary canal, it would require a somewhat longer time to appear in the saliva, for it must then first pass into the blood by endosmosis through the mucous membrane of the intestine, and then out by exosmosis, through the tissue of the parotid gland. Beside, it must accumulate in the blood in certain proportion, before a sufficient quantity can be distributed to the parotid gland, to be detected in the saliva. But there is no doubt that the salt of iodine *begins* to pass into the blood by endosmosis from the intestine, as rapidly as it is exuded by the parotid, when it has accumulated in the requisite proportion.

At all events, iodine makes its appearance very soon in the saliva after having been taken into the alimentary canal. It passes out also

with the perspiration and with the urine, and may be easily detected in all these fluids in any patient who is taking iodine as a remedy.

Many other substances may be found, in the same manner, in the secreted and excreted fluids, after having been taken into the stomach, or applied to the integument. The rapidity of endosmosis may be seen, also, in the operation of certain poisons. As a general rule, poisonous substances require at least several minutes for their operation, unless when introduced directly into the blood. For, as I have already said, though endosmosis *begins* at once, from the mucous membrane of the stomach or intestine, it requires a certain time for an appreciable quantity of the absorbed fluid to enter the vessels. This is because the absorbing surface is limited in extent, and because, also, the absorbed fluid is immediately mingled with the entire mass of the circulating blood, and of course only a small proportion of what has already been taken up reaches the organ upon which it is to act.

But if a poison which acts in small quantity could be at once brought in contact with a large absorbing surface, its effects would be produced almost instantaneously. For it would immediately enter the blood by endosmosis, and would then be at once distributed by the circulation to all parts of the body.

This is the case with those substances which are taken into the lungs in a gaseous condition. For the vaporous substance is then disseminated, by a single inspiration, over the entire surface of the pulmonary membrane, and passes into the blood as readily as the oxygen of the atmospheric air. It is for this reason that ether and chloroform act in a few seconds, when administered by inhalation, while opium, taken into the stomach, requires from half an hour to an hour to produce its specific effects. Hydrocyanic acid, when dropped upon the tongue so that its vapor might be taken into the lungs with the breath, has been known to act on the nervous system in from five to ten seconds.

The exhalation and discharge of vaporous substances take place with the same facility. The patient who has been etherized, for example, recovers consciousness and sensibility in a few seconds after the administration of the ether has been suspended, while the patient who has been narcotized by opium remains for several hours in an unconscious condition.

We have thus seen, gentlemen, how it is that various substances penetrate from without into the circulatory system by imbibition or endosmosis. By a similar process, the ingredients of the blood are exuded, in various portions, through the walls of the vessels and the

substance of the neighboring tissues, and in this manner the constituents of the animal fluids pass and repass through the absorbent and secretory membranes.

The Conditions attending every Attack of Acute Rheumatism. By Albert T. Wheelock, A.M., M.D., author of Boylston Prize Essay for 1838. Belfast, Maine.

Observations in this regard, continued through twenty years, have convinced me of the entire correctness of the following proposition, viz.: That every access of acute articular rheumatism is immediately preceded by a special condition of the nervous system induced by mental anxiety or the depressing passions. When the body is in this condition, a suppression of the sensible or insensible perspiration having taken place, the result is invariably acute rheumatism. This truth, though a simple one, is, to my mind, startling, and, without egotism, the most important pathological discovery in the present century. This track of investigation is so unusual—that is, the *rationale* of the production of a given disease—that it is not to be expected that it will be admitted without experience similar to mine, easily obtained, however, by inquiries of one's own or others' patients. It seems the more important, inasmuch as a definite cause discovered producing any one disease, affords a valuable stand-point, and an encouragement for similar investigations referring to other diseases.

Nothing of the kind, to my knowledge, had been given by any medical writer in English, and in 1855 opportunity was afforded me of making personal inquiries of several leading physicians in Paris, who stated the same was the case as far as concerned the French or German. My views were then written, and published in the *Gazette Hebdomadaire* for November of that year.

My materials, used in the investigation of the above-stated proposition, are observations of fifty cases of acute articular rheumatism. The patients were sufficiently intelligent, and the inquiries were no doubt unexpected, but at once understood, and their propriety and pertinency admitted. The cases given here, selected not entirely at random, but for the purpose of showing the disease in different aspects, were well marked, attended by fever at the outset, followed by extreme muscular prostration, and continuing generally several months.

Obs. I.—W. L., a clergyman, aged 30, married, was suffering much mental anxiety and depression, in consequence of opposition to him,

and difficulties in his church. At this period he took a severe cold, in consequence of being unexpectedly out late at night, thinly clad. The following day there was a severe attack of acute rheumatism, attended by the usual symptoms, and followed by extreme muscular prostration; disease continuing more than six months.

Obs. II.—G. P., shoemaker, aged 19, an orphan, had by years of industry saved a few hundred dollars, which he was likely to lose in consequence of having lent it to a friend, by a mercantile failure. His anxiety deprived him of appetite and sleep, and, during the several days passed in this manner, he became exposed to a sudden suppression of the perspiration by cold. An attack of acute rheumatism soon followed, with the usual symptoms.

Obs. III.—W. A. O., aged 40, master of vessel, unmarried, while on a voyage from Liverpool to Boston, the latter part of the winter season, was in a gale of wind fifteen days, and during the whole of that time constantly apprehending serious danger to his ship. During the first few days of this stormy and windy period he was much exposed to the weather, and of course very anxious concerning the fate of himself and the crew. At this time he experienced a severe cold, and a few days afterwards was prostrated by an attack of acute rheumatism. On arrival in port, being removed to hospital, he remained some months, and on discharge continued incapable for business several months more.

Obs. IV.—C. A., aged 25, had an intimacy with a near relative, and she had become pregnant by him. Both were well known to a large circle of acquaintance, and in a situation rendering the consequences likely to be disclosed. While under this excitement and anxiety he became exposed to severe cold, rapidly followed by an attack of acute rheumatism; the more serious effects of which lasted several months.

Obs. V.—E. J., nurse, aged 30, unmarried, of much valuable experience in her vocation; was to attend her sister during an approaching confinement; the previous confinements in this case having been unusually critical. Learning by telegraph of a premature confinement in the case, she was extremely anxious to be conveyed there. While under this mental excitement, making unaccustomed exertions to succeed, neglecting her usual precautions, she experienced a sudden suppression of the perspiration, by cold, and suffered a most severe access of acute rheumatism.

Obs. VI.—B. A., clergyman, aged 40, married, nervous, sanguine temperament, bilious habit, of an unusually social disposition, accom-

plished education; happy in domestic relations; lost by sudden death an only child. The affliction produced nervous excitement, amounting to partial insanity. While attending to some customary manual labor during this mental disturbance, he became wet in a shower of rain, and neglecting usual precautions, experienced a severe cold. Acute rheumatism consecutively followed.

Obs. VII.—J. K., farmer, aged 20, married, living in a newly-settled district of land, and making his farm, and laboring every day of the week in order to have his crops sown seasonably, was much troubled in mind in consequence of thus disregarding the Sabbath, having strong conscientious scruples against it. During this time, neglecting usual precautions, in consequence of his mental distraction. A severe cold was the immediate precursor of an attack of acute rheumatism, of five months' duration.

Obs. VIII.—Mr. C., merchant, aged 35, married, contracted gonorrhœa from a woman of the town; while suffering anxiety, in fear of the discovery of his faithlessness by his wife and friends, and attending to customary employment, by some neglect he experienced a severe cold, which was immediately succeeded by an access of acute rheumatism.

Obs. IX.—G. B. M., student in medicine, was candidate for the position of house physician to a hospital, the result of the candidacy to be decided by examination and thesis. Desiring the situation on account of pecuniary necessities, as well as the honor it conferred, he exerted himself very laboriously in his studies for several months, and had much anxiety in regard to the result. As the time of examination approached, succeeding some active physical exertions, he experienced a sudden diminution of the vital heat by cold, which was immediately followed by a lengthened attack of acute rheumatism.

Obs. X.—C. H., jeweler, aged 26, had pursued his occupation successfully for two years in a new and flourishing city, when being obliged to vacate his tenement on account of the sale of the building, he found much difficulty in obtaining another. He spent several days unsuccessfully in inquiring about the place, for that object. He was delicate physically, made more so by his sedentary employment. While exerting himself in this manner, being much depressed and anxious, he became exposed to sudden cold; the consequence being an attack of acute rheumatism, continuing several months, recurrences of which subsequently took place.

Obs. XI.—J. R.; female; age 29; married; amiable and affectionate disposition; unusual sensibility; temperament nervous; had been

for two or three weeks making preparations for an entertainment of numerous friends at her house; quite anxious, as might be expected, for everything to pass well; and during the evening of the entertainment was exposed to a strong draught of air through the opened doors, while receiving her guests. She attended to the duties of hostess, for the evening; the following day, commenced an attack of rheumatism, continuing four months.

OBS. XII.—B. W., a young professional man, aged 24, had an urgent engagement several miles from his residence, and was unjustly disappointed of his expected means of conveyance thither. While very much vexed, and anxious about the consequences of the delay, he went hurriedly to seek another conveyance; and obtaining a carriage, he jumped into it in a state of free perspiration, and drove rapidly off. Next day was the commencement of a severe and lengthened rheumatic fever.

Observations similar to the preceding, made during a series of years, affording no exception to the proposition above enunciated, its converse being equally found true, that no case of acute articular rheumatism has been observed not traceable to excessive mental emotions immediately previous, have settled indubitably, in my opinion, that mental emotions and cold produce with philosophical regularity and mathematical certainty the disease acute rheumatism. The connection between these phenomena is thoroughly proved.

What, then, is an important additional indication in the treatment? It is, of course, to bring into operation the requisite moral influences. The patient is to be made to understand the true nature of the disease and its cause. Though it cannot be expected that every individual shall exercise the force necessary to the forgetting or ignoring mental agitations in these cases, yet it may be presumable that a knowledge of the real producing cause may not only prevent a recurrence of it, but will greatly assist in fortifying the sufferer against its protracted continuance. In my own experience, I have found, when patients are informed that it has been brought on themselves by a mental agitation that might seem to have been avoided or was inexcusable and needless, the disease has been shortened in its course or immediately stopped; and where there had been successive attacks, the patients had thus been apparently spared these recurrences.

Reports of Surgical Cases. By John O. Bronson, M.D., Professor of Surgery in the New York Preparatory School of Medicine.

No. II.

FOUR CASES OF VESICO-VAGINAL PERFORATIONS.

Case 1.—*Cured in one Operation by New and Original Means.*—On the 6th of June, 1856, in conjunction with my colleague, Dr. C. A. Budd, I was called in consultation to a case of tedious labor. The labor, which had progressed favorably for a short period, was arrested at an early hour in the day, and at seven in the evening we met in consultation. The position of the fœtus was found to be regular, with the head low down. The vagina lacked moisture, and the external organs were greatly œdematous. It was decided to deliver at once by means of forceps, which was accomplished with care and skill by Dr. Budd. This was the fifth child of which she had been delivered, none of whom were then living, three of them having been still-born and withdrawn by the forceps.

The case was left in the care of the attending physician, who, on the fifth day after, again called me on account of a dribbling of urine, of which the patient complained. I found the vesico-vaginal septum inflamed and sloughing where it had suffered compression between the occiput and pubis. I counseled cleanliness and attention to the general condition of the patient, she being of a delicate constitution, and requiring supporting treatment.

This course was followed, and at the termination of four months the patient was deemed in condition to bear an operation for the cure of the lesion resulting from the sloughing.

Upon thorough examination, the parts were found perfectly cicatrized. The cervix uteri had been involved in the general inflammatory action, and had in great part sloughed away. To the left of the median line, and one inch from the cervix, a perforation of the vesico-vaginal septum existed, measuring one inch and a quarter in its vertical by three-quarters of an inch in its transverse diameters. Its border was quite regular, and in a healthy state. The question of an operation was decided in the affirmative, and I resolved to perform it on the following principles:

Preparation of the border of the opening being the first thing requisite, I deemed a vertical excision as usually practiced not as conducive to success as if the border was cut to a bevel, taking more tissue from the vaginal wall, thus producing a more extensive vivified surface, without really enlarging the opening. I considered other ad-

vantages to attend this manner of operating, as it involved a principle heretofore overlooked or unmentioned.

When the bladder is collapsed, the opposing surfaces, by every motion of the body or its larger members, are chafing the one against the other, and thus forcing the fluid it is constantly receiving into its cavity into any fissure or crevice, which in a state of rest would be wholly impervious.

A familiar illustration of my meaning is seen in a fine-meshed sieve, which will hold a considerable quantity of water if undisturbed, but if chafed even but slightly, by the palm of the hand for instance, the water is forced through rapidly and completely.

By beveling the border of the aperture, when the sides are brought into apposition the vesical edge is in closer contact than the vaginal, and a slight prominence is formed on the vesical side, which counteracts, in part, the influence exerted by the collapse of the organ. Another fact having an important bearing on this operation I have failed to find heretofore considered. I mean the difference of structure between the vaginal and vesical tissues. The strong muscular structure of the bladder greatly preponderates over the weak muscular tissue of the vagina. There is a difference not only in power, but also in function. The muscularity of the vagina is only active under sexual excitement; whereas, the muscular action of the vesica is stimulated by the presence of anything in its cavity. This difference presents an indication which is met in great part by this method of denudation.

Coaptation and maintenance of the lips of the wound in contact, with the exact amount of pressure, was the next subject for consideration.

Rest is a fundamental law of cure, and the more completely it is effected the more successful will be the result after operations upon the vesico-vaginal septum. To overcome direct opposing traction upon the lips of the wound is not all that is sufficient. A sliding of the lips upon one another must be also prevented.

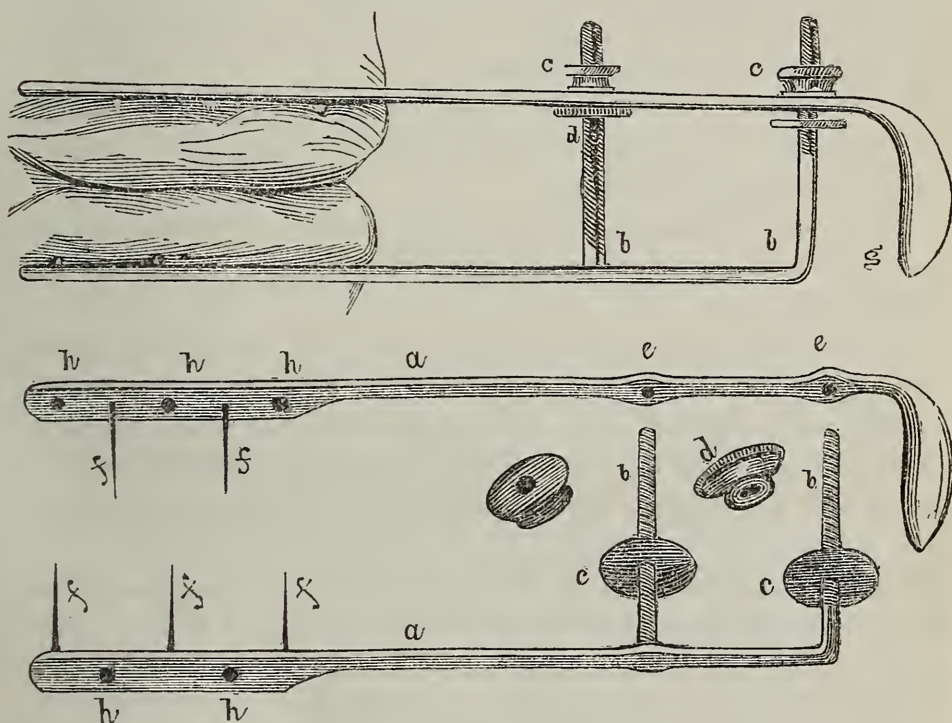
To meet these indications, I devised an instrument which combined the power of preserving perfect rest to the parts implicated, in overcoming both direct and oblique traction, and the advantage of being readily graduated in its pressure, external to the vulva.

Having well considered these matters, I proceeded to carry them into practice.

On the 30th of October, 1856, in the presence of Dr. B. Fordyce Barker, Dr. C. A. Budd, and assisted by Dr. J. H. Douglas, and Mr. Farrington, medical student, I operated on the foregoing principles.

Placing the patient on her knees, with her body flexed forward, and resting upon her shoulders, in the position first recommended and practiced by Wützer, the parts were brought into view by means of the swan-bill speculum or perineal elevator, as also first practiced by him.

First delineating with a sharp-pointed bistoury the extent to which denudation was desired, I proceeded to dissect a continuous strip from the vaginal border of the opening, three-eighths of an inch wide, leaving the vesical tissue barely encroached upon at its extreme edge. This step was readily perfected with bistoury and scissors. All was now ready for the application of the instrument, (see cut,) which was done by inserting the teeth one-half an inch from the edge of the denuded



a, *a*, Arms of the instrument.

b, *b*, Pillars threaded to carry the nuts.

c, *c*, and *d*, *d*, Which serve to confine the arms in their proper relation, and graduate the pressure.

f, *f*, *f*, *f*, *f*, Teeth, acting the parts of sutures. Opposite each is a hole, marked *h*, to receive the points of the teeth, in case it is necessary to bring the arms nearer to each other than the teeth would otherwise allow.

O, Flange, or process by which the arm to which it is attached can more readily be handled. The pillars, *b*, *b*, serving the same purpose in the application of the opposite arm.

The instrument is made of steel, and may be electroplated or not, as may be deemed desirable. By use it becomes protoxydized, in which state it remains without further corrosion. It is made by Tiencken, 749 Broadway, Lüer's well-known depot.

surface, and passing them between the vaginal and vesical membranes, and bringing them out at points in the denuded surface one-eighth of an inch from the vesical border. The two parts of the instrument were then approximated, and the lips of the wound brought into close contact, and there retained by means of the thumb-screws, perfectly closing the aperture. A catheter was then introduced and secured in place, and the patient, assuming the recumbent position, was left to rest and await the action of nature.

On the following day, everything was progressing favorably.

On the 1st of November, the second day after the operation, by a misunderstanding on the part of the attendant, the patient was not visited, and on the following day I found that the catheter had been accidentally removed and the vesica was filled to its apparent limit, and yet the parts were impervious. I drew off seventeen ounces of urine, giving the patient great ease.

On the 4th of November, the fifth after the operation, I removed the instrument, and found my fondest hopes realized in complete union of the lips of the wound.

On the 3d of December, having perfect control over urinary action, and able to retain her water as long as ever, she was discharged from further care.

Case 2.—Spontaneous Cure after One Year and Three Months' Duration.—Mrs. M——, native of Ireland, 25 years of age, mother of one child, consulted me in the month of October, 1857, by reason of inability to retain her urine, it being constantly dribbling away. I found upon examination that a perforation of the vesico-vaginal septum existed near the left border of the trigone, about one inch from the neck of the bladder. The opening admitted the passage of a common silver catheter, and had been produced by tedious labor. Operation was proposed and agreed upon, but violent opposition on the part of her husband to anything having the name of *operation* could not be overcome, and it was therefore postponed until after she should have given birth to a child, of which she was then two months pregnant.

On the 22d of May, 1858, she was taken in labor, and after twenty-eight hours, without unusual symptoms, gave birth to a female child. From this time, one year and three months from the birth of her first child, all dribbling ceased, and the patient was well. Upon close inspection of the parts, three weeks afterwards, it was found that union of the two sides of the perforation had occurred, apparently by reason of the pressure of the head of the fœtus occluding the aperture for

the time being, while nature put forth her efforts to permanently close the breach.

Case 3.—*Cured in one Operation by New and Original Means.*—Mrs. G——, native of Ireland, 32 years of age, was received into the New York Infirmary for Women and Children, Sept. 12th, 1859, giving the following history: She was the mother of three children, all of whom had been delivered with instruments, on account of a contracted pelvis. The last child was born still, in October, 1857, when she was in severe labor forty hours, at the end of which time her attending physician called Dr. A. K. Gardner in consultation, who immediately delivered her with forceps.

On the seventh or eighth day after, urine began to dribble through the vagina, and had continued ever since. Upon examination, a perforation of the vesico-vaginal septum was found to exist about a quarter of an inch from the cervico-vaginal junction, of a size admitting the passage of a uterine sound. Operation was determined upon. On the 14th of September, after thorough evacuation of the bowels, I proceeded as in the aforementioned case, with my patient in the same position. On account of the distance of the opening from the vulva, the successive steps of the operation were attended with some difficulty.

In performing the denudation, the tissue was found to be dense, and of too little vitality to augur well for success; nevertheless, it was finished, and the instrument applied as in the first case. On account of the relation of the parts, however, the instrument was slightly curved, thus allowing of a better adaptation. As in the former case, a catheter was secured in place, a suppository of opium introduced into the rectum, and the patient left to rest.

Dr. George T. Elliot, Dr. E. Blackwell, Dr. Hughes, Dr. Underwood, Dr. Stratton, and Dr. Cushing witnessed, and assisted in the operation.

On the 19th the instrument was removed in the presence of Dr. John Howe and Dr. Hughes, and union was found to be imperfect, although no communication existed between the bladder and vagina.

20th.—A small spot of moisture upon the sheet, yet upon examination no point was ascertainable through which water could have flowed. Nitrate of silver applied to the uncicatrized part, and a catheter passed, to be retained. 21st. Catheter withdrawn. 25th. No abnormal opening into the bladder. The vitality of the parts before mentioned evident in the cicatrization. Nitrate of silver has been occasionally applied, with good effect.

October 30th.—Retains her urine perfectly, and has done so since the 20th, holding it for two hours.

Nov. 2nd.—Bed again wet. No aperture, however, existed, and another cause had to be assigned. It was believed to be inability of the bladder to retain beyond a certain quantity of urine, and that it passed by the urethra.

This solution of the question was supported by the fact, that it never passed during the day, and only those two times at night. Commenced to menstruate.

Nov. 9th.—Perfect control over urinary action; cicatrization complete; discharged cured.

In the month of November I visited her at her home, and found her happy, in the freedom from one of the most, if not the most, serious of all maladies.

Case 4.—Cured in one Operation by means of the Silver Suture.—Mrs. C., native of Ireland, 24 years of age, was received into the N. Y. Infirmary for Women and Children, Oct. 28th, 1859.

She had passed through the terrible ordeal of tedious labor, under the care of that curse of his race, a base pretender, who had blazoned in his window "Physician, Surgeon and Accoucheur," and who, in every medical or surgical act, added to his daily sins that heinous crime of trifling with human life for filthy lucre.

She suffered the galling pains of ineffectual labor for the greater part of two days, when her attendant delivered her by means of instruments, and left the patient without removing the placenta, which remained for twenty-four hours, and then was taken away by a nurse.

As a result of such a state of things, severe inflammation of the pelvic viscera was awakened, producing sloughing of the cervix uteri, of the vesico-vaginal septum, and obliteration of the vagina to within an inch and a half of its ostium, leaving at that point, bounded by unyielding cicatricial tissue, a transverse opening into the bladder, measuring two inches in length by three-quarters of an inch in breadth. The vagina being closed above, in making a digital examination, the finger found immediate entrance into the bladder.

The parts being not perfectly healed, and a very considerable amount of irritation existing, a strong solution of the acetate of lead and opium was prescribed and used for the space of two weeks, with the effect of presenting her fit for an operation. In considering the condition of the parts, I found two of the indications for which my instrument was devised fulfilled by the cicatrix. Motion was destroyed, and there could be no sliding of one edge upon the other, for

bands extended from ischium to ischium, holding them more firmly than any mechanism. It was decided, therefore, to make use of the interrupted suture, as all that was required was simply to maintain the opposing borders in close contact. Accordingly, on the 11th of November, in the presence of Drs. Blackwell, C. K. Briddon, Aigner, C. A. Budd, Hughes, B. L. Budd, Cushing, and a number of pupils, I proceeded to denude the border of the opening, after the manner described in the first case, and applying five sutures of silver wire, I made a very free transverse incision on the posterior side of the wound, to free the parts as much as possible from direct traction. The patient was then arranged as in the preceding cases, and left to await the result.

On the tenth day after the sutures were removed, and although they had produced a considerable amount of ulceration, union was complete, and the patient was able to retain her urine entirely. Two days after she was discharged, cured; a result which I deem to have been based on the manner in which vivification was effected.

79 East 18th Street.

Lectures on Displacements of the Uterus. By E. R. Peaslee, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children, in the New York Medical College.

LECTURE VI.

Gentlemen—Retroversion of the unimpregnated uterus requires essentially the same management as retroflexion; but when it occurs during pregnancy, it is a serious, and as we have seen, at length becomes a most dangerous condition, admitting of no delay. I shall first speak of retroversion occurring during gestation, and then of retroflexion of the unimpregnated uterus.

I. Treatment of Retroversion occurring during Pregnancy.

The prime indication in the treatment of retroversion (or retroflexion) during pregnancy is, of course, to restore the uterus to its normal position. In some cases, however, some delay is admissible; and in such, the very frequent evacuation of the bladder by the use of the catheter, so that this organ is not allowed to become at all distended, has been known to accomplish the desired object. In eight cases detailed by Dr. Ramsbotham, the uterus gradually righted itself under this treatment alone. Dr. Ingleby also reports a similar case. If the catheter can be constantly worn by the patient, without much irrita-

tion, the same object is accomplished with more convenience to the medical attendant. This result of the means just spoken of, will also be rendered more probable by the daily evacuation of the rectum by copious enemata. It is, however, only while the uterus is still comparatively small—as during the first three months of gestation—that we can expect any success from these means. Drs. Blundel and Duncan advise also to keep the patient for several hours daily on her knees and elbows, with a view to effect the replacement. I should hardly wait to carry this suggestion into operation; but if the former means failed, or if for any reason there should be no delay, I should advise to proceed to replace the uterus by such manipulations as are hereafter to be specified.

The following preliminaries may, however, require consideration before we proceed to reduce the uterus by the taxis, as it is called, *i. e.*, by direct manual interference:

1. *The bladder should be evacuated.* There may be complete retention of the urine, as we have seen, or a constant stillicidium. But in either case—and in all cases in which any derangement of micturition occurs—the catheter should be used. Often the introduction of the instrument is rendered very difficult by the pressure of the neck of the uterus against the urethra, or the neck of the bladder. With a silver male catheter, or one of flexible metal, you may, however, generally effect the object without much difficulty. Some prefer a gum-elastic bougie. If the neck of the uterus can be reached and pressed slightly backward, the catheterism may in some cases be more easily accomplished. If, however, the operation be found impossible, the bladder must be punctured; but I think a necessity for this procedure should but rarely occur.

2. *The rectum should be evacuated.* This is best effected by an enema of Oj. to Oij. of warm soap and water.

3. Some advise to bleed the patient to syncope just before commencing the manipulations necessary to replace the uterus. Dr. Dewees had great confidence in this agent in this class of cases. But I think this will be but seldom found necessary since the discovery of the use of anæsthetics.

4. The question of etherization is also to be considered. If thought necessary, I should use the concentrated sulphuric ether, which I prefer to all other anæsthetics in almost all cases; the exceptions and the reasons I have before given you.

5. *Finally, the patient must be placed in the best position* for the operation of replacement. If pregnancy has not advanced beyond the eighth

or tenth week, the attempt may be made while the patient lies upon the back, with the pelvis raised, as upon a pillow. But if this fails, or if difficulty for any reason is apprehended, the patient should be placed upon the knees and elbows, and while in that position allowed to incline and rest upon the left shoulder instead of the left elbow; the latter change making her position far more easy to be borne, and quite as advantageous. The advantages of this position are: (1) that while thus placed the patient cannot strain or bear down, and thus resist the efforts at replacement; (2) that the atmospheric pressure aids in replacing the uterus, as first observed by Dr. Sims, of this city; and (3) that the body of the womb may be readily reached, if necessary, *per rectum.*

These preliminaries being resorted to, so far as may be required, we may proceed to the operation of reposition. Frequently the uterus may be returned to its normal position by passing the index or the middle finger, or both, into the vagina, and elevating the fundus from its contact with the rectum. Or if the finger is found too short, it may be rendered practically one-half to one inch longer by passing it into a portion, two inches long, of a gum-elastic rectal bougie of the proper size, (made hollow, of course, like the finger of a glove,) and then carrying the finger thus armed into the vagina as before.

If this measure does not succeed, a wire, ten inches long, bent at one extremity into a loop of the proper size, may be carried by the right hand into the vagina, and the loop passed over the cervix, with the intention of drawing it down, while the other hand is elevating the fundus. Churchill suggests the use of a hooked forceps for that purpose. A sound passed into the bladder may also be made to act as a lever upon the uterine neck to depress it. These means may be employed if pregnancy has not advanced beyond the third month, with the patient lying either upon the back or in Dr. Sims' position, before explained. If lying upon the back, she must be instructed not to strain during the operation. But if the uterus is already large, as in the fourth month, the latter position should at once be resorted to. And it is to be expected that the uterus will be replaced *per rectum,* rather than *per vaginam.*

It is a fact of great practical importance, that the whole hand, even, may be passed into the rectum of the male or female adult. The late Mr. Thomas, of London, first ascertained this fact in respect to the male; and Dr. Dusaussois in regard to the female. In some cases, Dr. Parent also succeeded in replacing the uterus only after he had

passed the whole hand into the rectum; and this is in any case to be attempted, if the reduction cannot otherwise be effected.

Having effected the reposition, the patient is to lie for several days (two to three weeks) upon the side, inclining more or less to the prone position, in order to prevent a recurrence of the retroversion. Meantime, the bladder must be constantly kept nearly empty by the use of the catheter; and enemata must be used, as required, to keep the rectum evacuated. Some advise to keep the patient on the knees and elbows for two hours every day, if a relapse is threatened. The time during which a patient is to maintain the recumbent position depends on circumstances. The probability of the recurrence of the displacement is of course greater as pregnancy is less advanced. During the first three months a relapse is very probable; after four months are completed, a relapse is quite improbable. After the uterus is so large that a relapse is out of the question, the patient may take as much exercise as if this difficulty had not occurred at all. During the first two months a ring pessary may be used to retain the uterus after it is replaced, provided there be no congestion or other condition to render it improper; and the patient may be allowed to leave her bed, and perhaps also to walk. But if used, it must be very carefully watched, lest it produce abortion.

We must, however, by no means feel assured that all the symptoms in a severe case will cease as a matter of course when the uterus is returned to its normal position. However carefully the operation may be performed, inflammation may ensue, and in some cases described by Amussat, even fatal metro-peritonitis occurred. Miscarriage also sometimes occurs after the reposition. We are, therefore, to be ready to meet any inflammatory symptoms which may ensue, by the use of leeches, venesection, anodynes, and appropriate regimen, as circumstances may require.

But cases occur in which, from adhesions between the displaced uterus and the contiguous parts, or from other causes, it is found quite impossible by any means to restore the gravid uterus to its normal position. If in such a case the uterus is still small and light, (first or second month of gestation,) a globe pessary $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in diameter, as required, may be introduced into the vagina, if there are no facts in the case to contra-indicate it; and which may gradually elevate the fundus, as it sometimes raises the uterus in prolapsus, (Lec. 4, p. 526.) The instrument is, however, used at the risk of producing abortion. But the latter affords the only chance of life to the patient, provided the uterus cannot otherwise be replaced; and the globe pessary

promises as much as any device in the way of elevating the body of the uterus, if abortion does not occur. Some would use the colpeurynter, or gum-elastic bag introduced while collapsed into the vagina, and then inflated; or the same passed into the rectum and inflated. The former, however, acts on the same principle as the globe pessary, and is more offensive to the patient. It has served to replace the uterus, and has also occasioned abortion. Its application *per rectum*, as first advised by Fouret, I do not recommend. It is, of course, disgusting to the patient and to the practitioner, requires to be removed and reapplied every day or two, and is not more efficient than when applied *per vaginam.*

But suppose that gestation has attained to the fourth or even the fifth month, and it is found impossible to replace the uterus; what is to be done? The only hope of saving the patient is from the induction of premature labor. This is most certainly and most promptly effected by rupturing the membranes, or breaking up the chorion, by the introduction of the uterine sound. And if the bladder be previously evacuated, and the patient be in a standing position, the os can generally be reached with the finger, and the sound passed without much difficulty; though it might not otherwise be possible. It is passed with the concavity looking backward. Or the patient may be in the position specified in the preceding lecture, (p. 26.) If the precise position of the os can be made out, a gum-elastic bougie, or one of flexible metal, may sometimes be passed, though the os cannot be felt with the finger. Or if the sound be found useless, I would use the cold or the warm water douche, *per vaginam*, as recommended and methodized by Prof. Kiwisch, of Würtzburg, for the induction of premature labor in cases of contracted pelvis. This failing, I would use the tampon in the vagina, if delay were admissible.

As a last resort to secure the expulsion of its contents from the uterus, the latter may be punctured with a trocar, either from the rectum or the vagina, and the liquor amnii evacuated; after which it may be expected that abortion will occur. This alternative has succeeded, but it is not unattended by danger, since the peritoneum is necessarily punctured in two places.

Gastrotomy has been recommended by Callisen, so that the uterus may thus be replaced by direct manipulation. I should say that unless the patient is in immediate danger, and the various means of inducing premature labor have all failed, the replacement of the uterus being at the same time found impossible, the idea of opening the peritoneal cavity is not to be entertained; and that even in these circum-

stances, but a very few cases will warrant it. So I should also decide that the division of the symphysis pubis, as advised by Gardien and Purcell, is never justifiable. And in regard to gastrotomy, I should add, that sometimes it would be found impossible to replace the uterus even after opening the abdomen. In the case described by Dr. Hunter, the uterus could not be moved from its position and lifted up through the superior strait of the pelvis, although the ossa pubis had been sawn asunder; it had so moulded itself to the surrounding organs.

If abortion occurs either after reposition or in consequence of means used to induce it, the treatment will, of course, depend on the circumstances of each patient.

Finally, if *retroflexion* occur during pregnancy, which I have before asserted is very rare, its treatment is essentially the same as that of retroversion. If the retroversion or retroflexion recurs after parturition, or after abortion, the case, of course, then belongs to the class next to be considered.

II. Treatment of Retroflexion of the Unimpregnated Uterus.

Having disposed of the posterior displacements occurring during pregnancy, the more frequent of which by far is retroversion, and which also requires the most prompt and efficient treatment; I now speak of retroflexion (and retroversion, which is far less frequent,) of the non-gravid womb. But I should speak, before entering upon the main subject, of that class of cases which, both from their symptoms and their necessity for prompt treatment, so much resemble those which have just been disposed of; I mean those cases in which the unimpregnated uterus has been suddenly displaced backward, as by a fall, or a violent effort.

Here, of course, the first question is whether the uterus is actually gravid or not. For, unless it be positively decided that it is not so, we are not to attempt to replace it with the sound; while if we can decide negatively, it may be used as in the cases next to be considered. The fact may be a guide in forming our decision, but it is by no means an infallible rule, that retroflexion of the unimpregnated uterus most frequently occurs during or very soon (within three or four days) after menstruation. If, however, in any case there be doubt, it must be treated as belonging to the class of cases just disposed of—as backward displacement during pregnancy.

Excepting the cases just alluded to, retroflexion of the unimpregnated uterus has generally existed for a long time—several months

to several years—before the physician is consulted; and from what I have said under the head of prognosis, you will infer that several months will probably be required for the proper treatment of this displacement. There are instances of retroflexion which produce no symptoms, and therefore require no treatment. Such occur most frequently in women who have had several children, or with whom the child-bearing period has passed. Most cases of retroflexion, however, require both local and general treatment.

I. The *local treatment* is of the first importance; and, as in prolapsus uteri, its indications are threefold:

1. To remove the causes of retroflexion, if possible.
2. To replace the uterus.
3. To maintain it in position.

Some, however, think the local treatment to be of no importance. Dr. West "takes care of the general symptoms, and leaves the displacement to take care of itself." Others, also, resolve the whole local treatment into a very simple matter. Some treat the congestion or ulceration, and leave the rest to nature. Dr. Meigs says in regard to retroversion of the non-gravid womb, "If you intend to cure a woman of retroversion, your intention should have reference rather to the *ligamenta rotunda*, than to the uterus;"* and he would cure it by the use of a globe pessary. But he merely alludes to flexions of the uterus as if very uncommon† and quite unimportant, and confounds them with mere flexions of the cervix.‡ Dr. Peebles asserts that when the vagina is "by any means supported to its proper length and height in the pelvis, displacement will be rectified." He proceeds to infer that Dr. Hodge's pessary, before described to you, is the best; and therefore uses it in "every case of displacement" (of all kinds) "where mechanical support is necessary."§

But you will find no exclusive view of this subject to prove satisfactory in practice. I shall, however, not here controvert the views I have just quoted, but proceed to the treatment I would recommend.

1st. *Indication.*—It is not by any means a general rule to remove the causes of retroflexion before any attempt is made to replace the uterus. Generally, the uterus is to be replaced at once, and the cause,

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* Woman and her Diseases, p. 209.

† "When the top of the womb is thrust over backward, the womb does not bend, being somewhat rigid, but it *see-saws*, i. e., the mouth comes forward if the fundus goes backward."—*Woman and her Diseases*, p. 236.

‡ Woman and her Diseases, p. 238–9.

§ *American Journal Medical Sciences*, July, 1853, p. 51.

if still persistent, to be subsequently removed. But this subject should be first considered.

The causes of retroflexion which are capable of being removed are distention of the bladder, constipation, polypus uteri, tight dressing, or too much weight of dress; and increased weight of the uterus from congestion, inflammation, or hypertrophy. Of these, distention of the bladder and rectum are, of course, to be removed before the attempt is made to reduce the uterus. The same is also to be remarked of polypus uteri, and the dress is to be attended to, after reduction, to prevent a return of it. In regard to congestion, inflammation, or hypertrophy, however, I should say that the uterus should first be replaced and retained in place, so far as may be, by a horizontal position and attention to the state of the bladder and rectum, before any special treatment to reduce its weight is resorted to. For all these conditions yield far more readily to treatment after the uterus is replaced. In some cases of inflammation or extreme congestion, the introduction of the sound would be injudicious, until the tenderness had been diminished by the use of leeches to the os uteri, and other antiphlogistic measures; and reposition might be impracticable without the aid of this instrument. I seldom delay, however, to use the uterine sound at once, (though it gives some pain,) for the reasons above stated; but in a proportionately very small number of cases, I should not feel at liberty to do so. But for the particulars of the treatment of these conditions, and for ulceration also, if it coexist with the displacement, I refer to the fourth lecture, (p. 525–6.)

2d. *Replace the uterus.*—But previously, the bladder and the rectum should be evacuated, as before stated, and the patient placed in the proper position. If for any reason the uterine sound is not to be used, she may be placed as in the case of retroversion during pregnancy, (p. 129.) But otherwise, she may lie on the back, as specified in the preceding lecture, (p. 26;) and the sound is to be introduced, and the reposition effected, as there explained.*

3d. But supposing the womb to be replaced; will it under any circumstances remain so without direct mechanical support? Very rarely indeed. I have thus far met with but two instances in which a single replacement sufficed; and both these were cases in which the displacement had been suddenly induced. Usually, the uterus falls

* For a description of an instrument devised by the late Dr. Bond, of Philadelphia, for the replacement of the uterus in posterior displacements, see *Am. Journ. of Med. Sciences*, April, 1849, p. 408.

back again in a few minutes, if not the instant the sound is withdrawn; though in cases of complete reduplication, it may be arrested for a time at the second degree. Some appliance must therefore be resorted to, which will act continuously for a time, to prevent the complete relapse. And now comes the question whether we shall merely attempt to keep it more nearly in place than we found it, i. e., convert the third degree or the second into the second or the first; or shall we endeavor to keep it in its normal position? And it is precisely at this point that the curative or radical treatment, as I shall term it, diverges from the palliative treatment most commonly resorted to. If we believe with the authority before quoted, that displacement cannot occur if the vagina be supported at its normal length and height, we may introduce a pessary into the vagina, so as to elongate it to its normal extent, and take it for granted that the uterus is precisely in its normal condition. But since a reference to fig. 1 will show you the impossibility of preventing all backward displacement of the body of the uterus by an instrument in the vagina, unless the latter rises almost to the level of the fundus itself, we must not be deluded by any such notion. The intra-vaginal appliance may generally push up the uterus so far that we cannot reach and detect the retroflexion, but it cannot possibly prevent its continuance in the first or second degree. Sometimes, also, the posterior wall of the vagina is so short that the instrument cannot be made to rise high enough to support the fundus even in the second degree of retroflexion; and hence it becomes almost, if not quite, useless.

I therefore hold the following propositions to be incontrovertible:

1. *It is impossible entirely to prevent posterior displacement by any appliance in the vagina alone.*

2. *The only agent which can certainly retain the uterus in place, after replacement in case of retroflexion, is an instrument passed into the uterine cavity,** (an intra-uterine pessary.)

There is, therefore, a propriety in distinguishing between the treatment which does not, and that which does, recognize the truth of these propositions; and I have termed the latter the radical treatment, and the former the palliative.

1. In speaking of the treatment of retroflexion which is most commonly resorted to as the *palliative*, I by no means underrate its value

* The introduction of an India-rubber bag into the rectum, to be subsequently inflated, is no exception to this proposition. I had tried them without satisfaction, and discarded them, before I became aware that they had been proposed by Fouret.

and importance. I simply allude to its actual *object and result*, viz., not to retain the uterus in its normal position, for this it cannot possibly do; but merely to keep it in a better position than that in which we found it. On the contrary, I affirm that this treatment often entirely removes all the symptoms, and sometimes effects a complete cure; and is alone to be adopted in nine-tenths of all the cases that occur.

With the understanding, then, that we are not to attempt the radical method, what instrument shall be used to improve the position of the uterus? One would use Hodge's pessary (the horse-shoe pessary) in all cases, and another the globe pessary; while I should, in most cases, recommend the ring pessary, (or steel spring covered with gutta-percha, or a ring of tin,) which I have before described, (Lect. 2, p. 258.) It must, however, be remembered that the value of the instrument depends on the distance to which it carries the posterior wall of the vagina upward and backward; so as at the same time to prevent the fundus uteri from falling downward and backward by supporting it through the vaginal wall, while it closes the Douglass *cul-de-sac* by its pressure backward. To accomplish this effectually, the instrument must have greater antero-posterior than bi-lateral dimensions, and hence Dr. Hodge's instrument is well adapted to this use. The same result is secured by the gutta-percha ring, or that of tin, they being previously set in the elliptical or ovoid form. If you warm the former till it becomes flexible, and then give it the required form by pressure in the hand, and still retaining it in this form, plunge it for a moment into cold water, it will permanently maintain it. The tin instrument is, of course, moulded into the required shape at once, and I often use it in the form here shown, or even more elongated. (Fig. 7.)

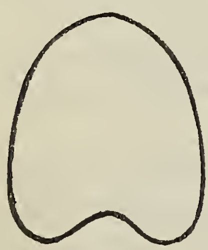

FIG. 7.

But do not forget that the higher the instrument rises posteriorly, the better. After the application of the instrument, the patient is allowed to exercise more or less, according to circumstances; and which I need not specify here. Its subsequent management is the same as laid down in Lect. ii., p. 257.

But you must not be surprised nor discouraged to find the uterus very nearly in its former abnormal position, the next time you examine your patient. By repeated replacements, however, and readjustments of the instrument, you may expect finally to remove the symptoms of the displacement at least; and which in many instances do not again return. At the clinique, though the patients present themselves but once a week, you have seen cases apparently cured by these repeated replacements, and the con-

stant use of the pessary; though the sound still showed some inclination backward of the fundus uteri. In private practice, however, the patient should be seen every second or third day.

How long should the pessary be worn? Several months at least, and perhaps a year or two, if gestation does not supervene. On its final removal, the patient usually feels the need of its support for a time, as in prolapsus. (Lect. iv., p. 527.)

Conception frequently occurs in those previously sterile, after the treatment I have recommended has been continued for two or three months, as you have observed. I have also seen this result follow in several instances in which I had not used the pessary at all, on account of an abnormal shortness of the vagina, but had simply used the uterine sound once in two or three days, and let the patient retain it from one to two hours at each introduction. All the symptoms of the displacement will also in some cases disappear under this management.

Finally, if adhesions exist which prevent the replacement of the uterus, a globe pessary may possibly promise something on the principle specified in Lect. iv., p. 526.

2. *The Radical Treatment of Retroflexion.*—The object of this modification of treatment being to maintain the uterus *in situ* after it has been replaced—it consists in the introduction into the uterine cavity of an instrument of sufficient length and firmness to render flexion of the neck upon the body impossible; or it differs from the preceding treatment only in the use of an intra-uterine support.

Much error of opinion has, till recently, existed in our profession in regard to the practicability of the treatment of which I now speak. Although Dr. Simpson several years ago reported a case in which a patient wore an intra-uterine instrument for ten months in succession, with impunity, Dr. Robert Lee strenuously maintained that, on account both of the danger and the inconvenience, no intra-uterine instrument should ever be used. Many practitioners, even at the present time, deny that the uterus, any more than the eye, will tolerate the constant contact of a foreign body, and speak of fatal results from attempts to compel it to do so. In respect to this indiscriminate denunciation, I have only to say that I have sometimes had patients wear an intra-uterine support for four months in succession, and I have never yet seen any dangerous symptoms result from their use. I can moreover add, that I have never, in a single instance, failed to find a patient tolerant of the instrument when I proposed and attempted to

use it. Our success, however, will depend (1) on a proper selection of the cases, and (2) on the form of the instrument we use.

1. The radical method should not be attempted if there be inflammation or congestion of the uterus, or much irritation and tenderness of the uterine cavity from any cause; or if there be ovarian congestion or inflammation. These being absent at first, or having been removed, we may, if the patient be vigorous and can command the necessary time and exemption from all opposing influences, commence the use of the intra-uterine support.

Before applying the intra-uterine support, I am accustomed to replace the uterus with the sound every other day, and then every day, and have the patient retain the instrument* at first an hour and then somewhat longer, from day to day. When the menstrual period returns I introduce the vaginal pessary, before recommended, (p. 36,) and allow it to remain till 48 to 72 hours after the period has passed, and then resume the daily use of the sound, as before. When the patient can retain it for four hours, without inconvenience, I use the intra-uterine instrument. This is, of course, to be watched, and if irritation or much pain ensues, it should be removed for a day or two, (a vaginal pessary being the mean time used,) and then reintroduced. Of course the patient is not expected to leave on a long journey with this instrument in place, even though she may have worn it a month without inconvenience; since it may get displaced, and cause irritation, and thus incur a discredit which it does not deserve. You would not hold yourselves responsible for the beneficial results of a splint applied in case of a fracture, unless you could examine it at proper intervals; nor would you allow your patient to escape from your observation while one was being used. Evidently the same principle should also here be adhered to. Many of the bad effects of this class of instruments have been due to carelessness in this respect on the part of the medical attendant.

It has usually required not more than three weeks to prepare the patient for the application of the intra-uterine support. It has generally been worn for four days to a week the first time; then for a longer period, after it has been removed for two or three days. A slight loss of blood occurs during the first two or three days, and afterwards a leucorrhœal discharge to some extent. In some cases the odor of the discharge is identical with that of the lochia after parturition. After the uterus is well accustomed to the contact of

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* It being attached to the thigh by a tape.

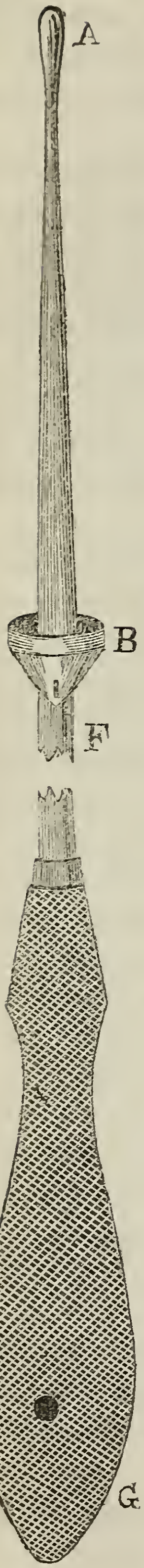
the instrument, it need not be removed during the catamenial period; but injections of soap and water are to be freely used as soon as the period has passed, and of water daily under other circumstances. I have never found it necessary to use an instrument more than four months in any single case.

2. But very much depends on the mechanism of the intra-uterine instrument used; and I did not obtain so favorable results till I had devised one quite unlike those which had preceded, and of which I will proceed to give you an account. I had found Prof. Simpson's intra-uterine pessary, and Valleix's modification of it, difficult of introduction, heavy and irritating to the patient, and very inconvenient, on account of their external appliances for maintaining the stem in the uterine cavity. And about seven years since I applied myself to the production of an instrument which should as far as possible be exempt from these defects.

After much experimentation, I adopted, as the easiest method of application, the principle of introducing the intra-uterine portion or stem *by itself;* and then, while still holding it in place, attaching to it another portion in the vagina, which should retain the former in the uterine cavity, and thus rid the patient of all external apparatus. It was the next step to decide of what material to make the different parts of the instrument; gum-elastic, gutta-percha, and several of the metals, being the principal substances experimented upon. I finally discarded gum-elastic and gutta-percha, (except in the vaginal portion of the instrument,) and adopted the form and composition I am about to specify. It required more time than you would suppose to bring the instrument to its present state; and in August, 1856, I announced it in the Monthly. I had, in the course of my investigations, also tried to attach the vaginal portion (of a different form from the present) to the intra-uterine portion, and introduce both at the same time; but gave up the idea, on account of the greater difficulty of introducing the stem into the uterine cavity. Dr. D. S. Conant, of this city, acting upon suggestions first made by myself, has, however, devised an instrument made of gutta-percha, in accordance with this idea; the vaginal portion consisting of two wings attached to the stem by hinges, (an arrangement greatly facilitating its introduction,) and which I am assured fulfills its object well. I had used a similarly formed instrument, the vaginal portion consisting of a thick plate of gum-elastic; but discarded it, as before stated.

The instrument I have used of late consists of three portions: a staff, the intra-uterine portion, or stem, and a vaginal support to the

I.



II.

IV.

latter. The staff is passed into the intra-uterine portion, (which is a tube,) and the latter is thus carried into the uterine cavity. Then the vaginal portion (a ring of peculiar form) is passed into the vagina, over the handle of the staff; and finally this portion is attached to the stem by a screw, and the staff is withdrawn. To remove the instrument, the staff is reintroduced, and the vaginal portion detached by turning the screw in the opposite direction. The particulars will be understood by reference to Fig. 8, I, II, III, and IV.

I, is the staff, $8\frac{1}{2}$ inches long, made of tempered steel, and flattened above and below the cone B, (which is cast upon it of German silver,) to fit the opening seen at IV in the lower end of the stem, II.

II, the stem or intra-uterine portion; a silver tube about $\frac{3}{16}$ of an inch in diameter, and $2\frac{1}{2}$ to $2\frac{3}{4}$ inches

III.

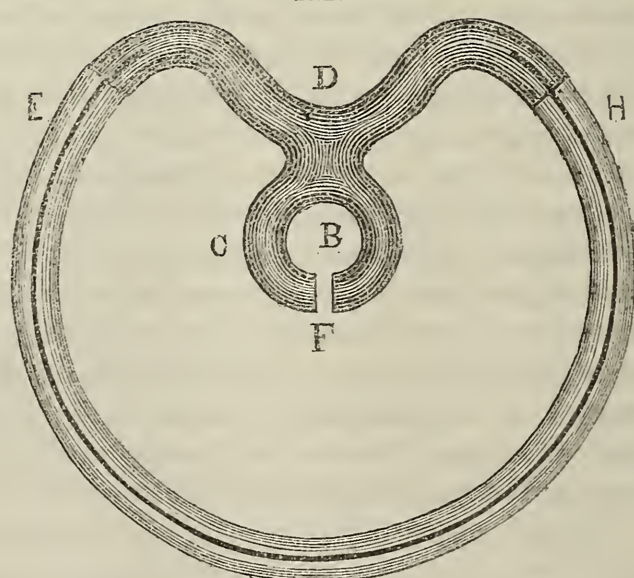


FIG. 8.

long, with the cone C cast upon it of German silver. It has an eye like that of a catheter as seen above C, and another near its upper extremity on the opposite side, for the transmission of the menstrual fluid. B is a screw with a coarse thread, making one turn and a quarter.

III, is the ring, or vaginal support of the stem. The upper portion, shaded dark, is made of German silver, its two arms being cylindrical, and about $\frac{3}{16}$ of an inch in diameter; the projecting central part is flat, and $\frac{1}{8}$ inch thick. The dark line extending from E to H is a steel watch-spring, let into the arms at those points, and secured by rivets; and the spring is covered by gutta-percha, so as to give this part of the ring the same diameter as the metallic portion, ($\frac{3}{16}$ inch or more.) F is a slot, through which the portion of the staff F passes in, attaching the ring to the stem; the central portion has the same diameter as the cone C, on the stem; and the opening, B, corresponds precisely (presenting a female screw) with the thread on the stem. The curve D corresponds with the urethra, and is, of course, in front when the instrument is in place in the vagina. Finally, the stem and other metallic portions of the instrument are gilded by the galvanic process.

IV, shows the long oval opening at the lower end of the stem, corresponding to the shape of the staff above B.

It will be seen that the object of the cone B on the staff is to bring the screw on the stem to correspond accurately with the opening B, in the ring or vaginal portion. When this correspondence is made, the stem is attached to the ring by turning the staff once and a quarter round, when the screw takes its place, and the staff is withdrawn.

The stem is passed into the uterus, either straight or slightly curved, and is retained on the staff by slightly curving the latter before it is passed into the stem. I have also caused a hole to be drilled through the handle of the staff, and another vertically through the cone B, so that a double thread, first inclosing the stem above C in its loop, and then passed through the eye of the stem and the opening IV, and then through the vertical hole in the cone B, to be tied finally to the handle, may prevent the least displacement of the screw from the cone B till the screw is in its place. Then the thread is untied and drawn away by one end, after the staff is removed.

The length of the stem and the size of the ring must of course be adapted to each particular case. Its *form* is modified as on p. 136.

I do not, by any means, claim perfection for the instrument I have described, and shall be happy to see other and better applications of

the principle it was the first to illustrate. I regard it as possessing the following advantages over its predecessors:

1. It is easy of application. I have never failed in the attempt to apply it.

2. The vaginal portion being elastic, allows the uterus to yield somewhat to sudden pressure from above, and thus the instrument gives the patient less uterine irritation. If, however, the ring is cast in tin in a single piece, it answers a good purpose, and is of course less expensive.

3. It does away with all external bandages and other appliances, and thus relieves the patient from an abiding consciousness that she is wearing an instrument, at the same time that it removes all inconvenience from them.*

II. It is unnecessary to speak at length of the *general* and *moral* treatment of retroflexion, since nothing peculiar to this displacement is here required; and I have therefore only to refer to my remarks under those heads in the 4th lecture, (p. 530.)

The anterior displacements will be the subject of the next lecture.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. Gibbs, M.D., Frewsburg, N. Y.

Climatic Relations of Consumption.—In the *Lancet and Observer* for June, Dr. A. P. Dutcher has an article upon the influence of *climate and cold* in the production of consumption. He does not believe tubercle to have an inflammatory origin, neither does he believe that cold is influential in the production of consumption. In regard to a favorable climate for consumptives, he says: "We have in North America, in the United States, all the variety of climate that is to be found in the world; and if there be one spot on this globe more likely to prove serviceable to consumptives than any other, it may be met with here." * * * "There is an extensive district bordering upon the extreme South of the United States which undoubtedly, in point of salubrity and adaptation of climate, must equal, if not surpass, any other country on the globe as a residence for consumptives. I refer to the State of Texas; and if the reports of travelers speak truth, this region will yet be the paradise of the world—at least so far as its geography and climate are concerned."

* It is made by Otto & Reynders, 58 Chatham Street.

We quote the above for the purpose of making one remark, the idea of which, we believe, is too often overlooked in choosing a residence for consumptives. We believe everything depends upon the *native climate of the patient.* To send a patient, born and reared in Maine, or anywhere in the extreme Northern States, to Texas, would result in the enervation and de-energization of the patient, and thus invite disease and death, the very things it were desirable to avoid. As we have often previously said, we say now with emphasis, *we would rather send a consumptive friend four degrees north, than ten south, providing we could select the locality and control the habits of the patient.*

Chlorate of Potash in Secondary Syphilis.—In the *Lancet and Observer* for June, Dr. W. H. Bryant has an article upon the curative action of chlorate of potash over secondary syphilis. His usual dose is eight grains, repeated every four hours, and improvement, he says, is usually manifested in a very few days. He concludes his paper by saying, "It is not my intention to say that potassæ chloras is a specific for syphilis, but merely to say that in my honest opinion it is a very valuable addition to the therapeutics of this loathsome disease."

Diphtheria.—In an article upon diphtheria, by J. H. Barbour, in the *Lancet and Observer* for June, the author speaks highly of the following formula:

"℞.—Chlorate of potassa,	℥j.	
Sulph. quinine,	grs. xvj.	
Water,	℥xvj.	Mix.

Dose from a tea-spoonful to a table-spoonful every three hours, according to age. In cases where there is a pale, moist, cool skin, a frequent and soft pulse, the addition of Bourbon whiskey to the above formula will prove of great benefit." Our readers will remember that at the time of the preparation of our last *Summary*, we were having some experience with this fearful disease, and then spoke very favorably of whiskey. In the last two months we have had considerable experience in the treatment of diphtheria, and in view of that experience, we would say, be the other treatment what it may, both local and constitutional, by all means give whiskey from the first. In every case in which we have got our patients to take from half a pint to a pint, daily, (adults we mean,) from the first manifestation of the disease, great prostration has been prevented, and recovery has been very speedy. In those cases in which it has not been taken, with only one exception, the cases have protracted through a period of from three to five weeks, and convalescence has been slow, and not unlike a bad case of typhoid fever.

Paracentesis Thoracis.—In the *N. O. Medical News and Hospital Gazette* for June, in the "*Clinical Reports of Cases observed at the Charity Hospital,*" Prof. Austin Flint has the following remarks upon paracentesis thoracis: "The question then arises, is it judicious to resort to paracentesis in ordinary pleurisy? There can be no doubt of its propriety when, from the accumulation of liquid, life is threatened. But it seems to me the question may be answered affirmatively with reference not alone to these, but to nearly all cases of the disease. In the first place, the innocuousness of the operation is sufficiently proved by clinical experience. It is not only a trivial operation as regards pain and immediate danger of unpleasant results, but it leads to no remote evils; hence, it is open to no serious objections. But it has certain positive recommendations; let us mention some of these. It effects directly, speedily, and certainly, the main object of the treatment in chronic pleurisy, viz., the removal of the effused liquid. Remedies, on the other hand, effect this object indirectly, slowly, and are not always reliable. It accomplishes the object of treatment with little or no disturbance of the system, and without reducing the strength of the patient. Remedies, on the contrary, give rise to more or less disorder, and reduce the patient's strength. It preserves the lung from the effects of long-continued compression, and the expansion is, therefore, more complete when the liquid is removed. For this reason, there will be likely to occur less contraction of the affected side than when the liquid is slowly carried away by absorption. These recommendations render paracentesis judicious, as a rule, in cases of chronic pleurisy, exclusive of those in which absorption cannot be effected by the usual therapeutical measures and those in which the quantity of liquid, or its rapid accumulation, occasions great distress and endangers life."

Liquor Amnii.—In the *N. O. Medical News and Hospital Gazette*, for June, Prof. D. Warren Brickell has a very interesting and able paper on the *function* of the liquor amnii. He enumerates all the functions ascribed to it by obstetrical writers, fourteen in all. The first eight enumerated he considers quite visionary, and, with perhaps one exception, entirely unfounded in fact. The eight rejected, each has one or more of such names as Churchill, Rigby, Dewees, Tyler Smith, Baudelocque, Cazeaux, Ramsbotham, &c., in their support. Prof. Brickell urges his objections forcibly, and we think conclusively. The functions named by authors to which he gives his assent are the following: 1st, The liquor amnii secures the fœtus from external violence; 2d, It protects the fœtus from the uterus; 3d, It protects the

cord and placenta from pressure during gestation and labor, and thus preserves intact the circulation of the child; 4th, It assists dilatation of the os uteri in labor; 5th, It favors the presentation of the head of the child; and 6th, It favors the development of the fœtus. The *third* and *fifth* function he considers of the first importance, though insisted upon by only a very few of obstetric writers. To the above functions Prof. Brickell adds another, thus: "I assert that an important function of the liquor amnii is to counteract the specific gravity of the fœtus, and thus prevent disagreeable physical results *to the woman* in the later months of pregnancy, when the weight of the child becomes considerable. At full term the well-developed fœtus weighs from six and a half to eight pounds; and from the seventh to the ninth month of pregnancy, the weight varies between four and a half to five pounds and these first-named weights." We have not the space to give the author's argument in full, and must be content with a synopsis. "I find by actual experiment, that if a five-pound weight is placed on the back of my hand and the palmar surface of the hand is then applied to a table—thus establishing counter-pressure—soon pain is experienced, and it is not long before that pain becomes insufferable—the degree of endurance, of course, varying in different persons, according to the degree of muscular development, &c.; and I am sure that long continuance of the pressure would cause death of the tissues immediately, under the weight." * * * * "If there was no water in the womb, the weight of four and a half to eight pounds would be pressing on the womb tissue (inferiorly,) with the counter-pressure of the pelvis below; and this, as we have shown, could not be borne." Now, with all due respect for the opinions of Prof. Brickell, we cannot avoid the conclusion, that this function is somewhat visionary and chimerical. We have certainly seen patients in whom the liquor amnii had escaped, and yet the fœtus of near maturity was carried for days, and, in one or two rare instances, for weeks, without any expressions of discomfort from pressure, &c. We all know that females occasionally carry solid tumors, surrounded by no fluid, for years, without any of those disastrous effects upon the tissues to which Prof. Brickell alludes. To carry a weight of that of the human head upon the shoulders, would, in a few hours, become a tiresome feat; but to carry the head where nature placed it, is a different matter altogether.

Quinine and Malarial Fever.—In our *Summary* for December last, we gave the substance of a paper by Dr. W. A. Brown, of Texas, which appeared in the October number of the *Nashville Journal of*

Medicine and Surgery. Strictures upon that article have called forth another from Dr. Brown, in the June number of the above-mentioned journal. The importance of the subject is our apology for again alluding to the subject. The main points of Dr. Brown's paper are, 1st, that "quinine is, *per se, the* remedy, in all forms, all stages, and all *complications* of malarial fevers;" 2d, that "enlarged spleen, deranged liver, indigestion, &c., &c., following fevers of a malarious character, are the result of *treatment*, and not of malaria." Dr. Brown believes all "preparatory treatment" is entirely superfluous and injurious—"for all stages, and all complications," quinine is the remedy. "What would you think," he says, "of the physician who, if called to treat a case of poisoning, was first to commence setting a single organ right, without removing the poison, or neutralizing it by suitable antidotes?" Though Dr. Brown regards quinine the all-important remedy in malarial diseases, yet he is no advocate for large doses. He says, "It is very seldom that ten grains will not succeed as well as twenty; and owing to the unpleasant effect of quinine upon the nervous system, we should try to find the least doses that are positively reliable, rather than how much may be taken without positive injury."

Our opinions accord with those of Dr. Brown, and our experience confirms our opinions. Our earliest observation of disease was in a malarial region, and we early saw the necessity of making a shorter cut to health, in our intermittent and remittent cases, than was obtainable by the usual treatment. In the accomplishment of this end, we converted the sulphate of quinine into a solution of the tartrate, by the addition of tartaric acid and water, or some other vehicle. We gave, at first, an equivalent of from eight to ten grains of the sulphate of quinine, and from two to four grains of opium. This was given from *two to four hours before the expected paroxysm*, AND NOT REPEATED UNTIL THE NEXT DAY, and then in only half the dose, if the paroxysm was prevented by the first. After this, the from four to five grain dose was given daily for a week, and then weekly during the remainder of the malarial season. We claim this as an original idea and use of this remedy. In a disease, having daily exacerbations and remissions, the remedy designed to supersede it by its specific action, should be given *only daily.* The dose should be such as to supersede the paroxysm—anything more than this, and other doses than the one, only tease the system unnecessarily. Under this treatment, be the stage or complications what they might, a cure was always effected, and that cure was permanent. Perhaps farther South, larger doses might be required. It will be seen that the amount of quinine used

here is much less than that employed by many, and yet the results are, in every instance, immediate cure. The patients were not confined to the bed with four or five weeks of preparatory treatment, but were usually out of bed on the second or third day.

These opinions, and the result of our experience, were communicated to, and published in, the January issue of the *North American Medico-Chirurgical Review*, for 1857. So much for our opinions and experiences in this matter. In conclusion, we take great pleasure in recommending to the attention of our readers the papers of Dr. Brown in the *Nashville Journal of Medicine and Surgery*, and also the able editorials, upon the same subject, by Professor W. K. Bowling, of Nashville.

Since writing the above, a paper or two has fallen under our observation that can best be considered here. In the *Chicago Medical Journal*, for June, Dr. R. C. Hamill has a paper upon the sulphate of quinine. Dr. Hamill believes there are many cases of irritative fever, similating a typhoid, that are "brought about by the exhibition of quinine, at stages of disease when the system was not prepared for its healthful action, &c." Our belief differs somewhat from that here expressed. We believe there are many cases of malarial disease that *degenerate into* an irritative fever of a typhoid type, because quinine is withheld, in a worse than useless attempt at a fanciful preparation of the system for that agent. This opinion is based upon our experience and what we deem a careful observation of the diseases of a malarious origin and their treatment. But Dr. Hamill rules our experience out, as the following quotation will show: "I would not choose him for a careful observer, who has settled down upon the theory, that quinine is anti-malarious, and therefore applicable to all cases of malarial origin." * * "I yield to no one in my admiration of the sulphate of quinine in the treatment of disease where it has a known virtue; but I must be convinced that the *system is in that state of preparation* which admits of the development of its legitimate power, before I am willing to exhibit *it even in a case of ague.*" (The italics are ours.) What will Dr. Brown and Prof. Bowling say to this? The former says he has "spent manhood's prime in search of more light;" yet Dr. Hamill would not regard him as a careful observer. We would commend to the attention of Dr. Hamill the papers of Dr. Brown, referred to above, and if they do not convince him of the error of his position, if he will practice upon the instructions there given, we are confident his views will undergo a modification. For ourselves, we feel that certainty which successful experience gives, supported by as

good authority as can be found in the country, that quinine, when its powers are fully and judiciously brought out, is abundantly adequate to meet all the varying conditions of malarial disease.

Dr. Hamill has some singular notions in regard to the action of quinine. He says, " I deny the tonic property of quinine, as taken for granted by Dr. Headland, and those who adopt his views, and find no argument in the discussion of this point which would not apply with as great, if not greater, force to its exclusion, upon the principle that it has so many points of resemblance to urea and uric acid, which are poisons, and their retention in the blood is the cause of irritative fever." Any tonic property it is found to possess, he believes to be the result of its stimulant action upon the nerves and absorbents of the stomach.

In the *Chicago Medical Examiner* for June, Dr. J. N. Graham has an article upon quinine, in which the correctness of some of the opinions of Dr. Hamill are called in question. We have not the space at disposal for a synopsis of Dr. Graham's paper. Suffice it to say that he regards it as a tonic, and safe in all stages of malarious disease. He, however, regards it as a *stimulant*, and admits its *sedative* property only under certain circumstances. We shall have a word more to say in reference to the stimulant action of quinine a little further on. It may not be amiss to state here, that the lamented Dr. Drake regarded it as a "*sedative and antispasmodic narcotic.*"

Pursuing this subject, we beg leave to refer to a paper upon the subject of quinine, by Dr. M. Marsh, of Port Hudson, and published in the June number of the *N. O. Medical News and Hospital Gazette*, in which some opinions of ours, upon the subject of the therapeutic action of quinine, are combated with earnestness. Dr. Marsh says that "intermittents and remittents of miasmatic origin *are the only diseases* promptly relieved by quinine, and that its use, as a special remedy in the treatment of inflammation, is not indicated, and is useless, if not *positively injurious.*" (The italics are ours.) When an inflammation recovers under quinine, it is his opinion that that agent "generally retards, and never expedites, a cure." Upon this point we should, of course, take issue, did space permit; as it is, we will only say that all inflammations accompanying a malarious disease, and connected with it in a common origin, is best treated by quinine; and, in our judgment, there are many other cases of inflammation, unconnected with malaria, that would derive great benefit from the same treatment. Of the agent in question, Dr. Marsh says, " In some conditions of the system, accompanied by local irritation, it acts as an irritant or

stimulant, producing excitement of the vascular system, manifested by *increased frequency and fullness of the pulse*, and augmented respiration, furred tongue, and other symptoms of a febrile state, with increased plasticity or inflammatory condition of the blood." This does not correspond with the statement of Dr. Cochran, and quoted in one of the papers above referred to, when he says of quinine, "if administered in large doses, and frequently repeated, it *defibrinates* the blood, *rendering* it fluid and incoagulable." If quinine be a stimulant, it has not in our hands increased the frequency of the pulse. In such cases as we deem it appropriate, it almost invariably acts as a *sedative*, lessening the frequency of the heart's action. We well remember a case of pneumonia to which we were called in consultation. The patient had been bled, and antimony had been liberally administered, also calomel. Now, at the end of the tenth day the cough was dry and harsh, skin dry, tongue dry and cracked, the pulse about 140, and every way the patient looked unpromising. The more essential part of our prescription was three grains of quinine and half a grain of opium, to be repeated every four hours. The attending physician objected to the quinine, and would not be persuaded to administer unless the friends could be apprised of the fact that he objected. To this we consented, and, confident of the result, we made a show of compromise, by saying that if the pulse did not come down ten beats per minute from the effect of the first three powders, he might discontinue. The medicine was commenced with, and the results so satisfactory that it was continued, and in forty-eight hours the pulse came down to eighty-five, thus losing over sixty beats per minute. At that time, too, the skin was moist, the cough loose, expectoration easy, tongue cleaning, and every way the patient was improved. The treatment was continued, and the patient made a good recovery. It is but proper to say that the case was entirely free from malarious influence. In this case the quinine did not increase the frequency of the pulse, and we could not be easily convinced that it was "positively injurious," retarding the cure.

Upon the above subject we have extended remark beyond the usual scope and intent of our articles. The importance of the subject must be our apology. The remedial power of quinine, even in malarious diseases, is not fully appreciated, except by a minority of the profession. Those who waste weeks, or even days, in the preparatory treatment for this agent, in malarious diseases, be the state or complication what it may, do so, perhaps, to the benefit of their pockets, but to the great sacrifice of comfort and increase of risk that is attainable by the

treatment advocated by Dr. Brown, in the paper first here referred to. The MONTHLY finds many readers in malarious localities; and if the above remarks shall, even in a small degree, contribute to the sufferers under their charge and elicit a multiplied experience, they will not have failed of their design.

Veratrum Viride in Pneumonia.—In the *Nashville Journal of Medicine and Surgery*, for June, Dr. A. A. Davidson has an article upon the use of veratrum viride in pneumonia. This is not new treatment, but his experience and confidence are such as to justify their repetition. He says, "I have followed no other particular treatment for the last two years in pneumonia and pleurisy than the medicine in question, and I am happy to say I have never seen a case terminate unfavorably under the treatment." In conclusion, he says, "I look upon the veratrum as being worth all the other treatments combined for pleurisy, pneumonia, and all the other diseases of an inflammatory nature, when carefully and judiciously administered. I speak this candidly, because it is my own experience that prompts me to do so."

Erectile Tumors.—In the *Chicago Medical Journal* for June, Prof. Brainard has a lengthy and able article upon erectile tumors and their treatment. Some such tumors he has been treating successfully with the injection of a solution of the *lactate of iron.* We have not space for a synopsis of his paper, and will simply give his conclusions. He says, "The relative merits of the different methods of treating erectile tumors may be summed up as follows:

I. Excision should be performed in every case where the size and situation of the tumor will admit of its being performed. This is almost as much a rule in these cases as in cancer. The exceptions are the slight cases which may be trusted without treatment until they increase in size.

II. When excision would cause too great a loss of substance, danger from hæmorrhage, or when, from any cause, excision is objected to, strangulation is to be preferred next in order, and whether effected with ligature alone, or with needles, or other means, it should always, if possible, embrace the whole diseased structure.

III. In limited superficial nævi and erectile tumors, particularly if placed over bony surfaces, compression will often diminish, if not cure, the disease.

IV. In deep-seated tumors, particularly aneurisms by anastomosis, cauterization with the hot needles is an extremely efficient remedy, either by itself or in connection with other means.

V. Setons or metallic needles may be used in the venous forms of

the disease. They are more effectual when placed to some extent in sound tissue.

VI. Ligature of the principal artery leading to the part is adapted to the variety called aneurism by anastomosis, the accidental thrilling variety, and particularly to that variety situated in the orbit of the eye. I believe, however, that it is more dangerous and less necessary than is generally supposed.

VII. Vesicants, escharotics and caustics, are adapted to complete a cure, when a small portion of tissue remains after excision, strangulation, or seton. They are uncertain, and little to be relied on.

VIII. A combination of several of these methods of treatment will often be found advisable."

Neuralgia.—In the *Chicago Medical Examiner* for June, Dr. L. D. Robinson has an article upon neuralgia, in which his views of its pathology are given, and also his plan of treatment. We subjoin only the treatment. In a case reported, the treatment advised, which, he says, was that usually advised by him, was the following:

"℞.—Chiniodine,	24 grs.
Pulv. Capsicum,	5 grs.
Strychnia,	1 gr.

M.—fiat. pil. No. 10. Dose—a pill before each meal.

After using the above sufficiently long to break down the paroxysms, and give the patient relief, we prescribed the following:

℞.—Quevenne's iron,	60 grs.
Quinine,	60 "
Ext. Hyosciami,	40 "
Pulvis Capsici,	20 "

Divide into 40 pills. Dose, a pill after each meal, and to be continued until completely relieved of debility."

With this treatment, the author says he has been remarkably successful in the treatment of idiopathic neuralgia. Though we have great faith in the powers of strychnine over many cases of disease, we cannot help thinking the dose is imprudently large to commence with in the formula above. Our commencement dose for an adult is one-twentieth of a grain; in the formula above, it is twice that.

Endermic Use of Animal Fat in Typhoid Fever.—In the *Southern Medical and Surgical Journal* for June, Dr. Baker, of Alabama, has an article upon the above subject. Dr. Baker thus reports his experience: "I have for the past five years employed it (animal oil) in all cases (of typhoid fever) where there existed a harsh and dry skin, with the unfailing effect of rendering it soft and pliant, just as it would

an old piece of indurated leather. In scarlet fever, its application is especially indicated both during the height of the fever and in the subsequent stage of desquamation. I have found nothing so beneficial in softening the skin and soothing the irritation during the eruption; and I have also ascertained that its continued application during the period of convalescence, combined with the occasional use of the warm bath, tends, almost certainly, to prevent the subsequent and so much dreaded dropsical effusion.

In that dry, hot, and husky condition of the skin so often observed during the first two weeks of typhoid fever, when the hand may be held in contact, for any length of time, with the patient's skin, without producing the slightest moisture, or changing in the least its dry and harsh state, inunction produces the most happy effect; the hot, dry, shriveled and harsh skin becoming cool, moist, smooth and pliant."

We should be happy to make several extracts from the lengthy paper of Dr. Baker, but must content ourselves with one or two more. He says, "The reason why I have recommended animal fat in typhoid fever, originates in no idea of its exclusive adaptedness to that disease. Its good effects, when thus applied, are equally manifest in many other wasting and long-continued diseases; and here, in passing, I will say, that it is especially advantageous in the *tabes mesenterica*, occurring in the second year of infancy. In such cases, the endermic application of cod-liver oil affords more promise of success than all other medication combined. Indeed, what medical practitioner in the Southern country has not heard the old nurses on plantations boasting of the cures they have worked by 'washing' some little weak-necked, scrawny-limbed, big-bellied infant in 'pot-liquor?'"

Dr. Baker concludes his paper thus: "Such is my faith! May I be pardoned for saying, only with that degree of confidence with which the truth should be proclaimed, that I prove my faith by my works, in safely conducting, with these means, (animal fat externally and turpentine and brandy internally,) many patients through attacks of typhoid fever, and bringing them out, in the end, emaciated to no great degree, but on the contrary, with such an integrity of tissue, as insures a much more speedy convalescence than takes place in ordinary recoveries."

Chloroform Poisoning.—At a late meeting of the Medical Association of Georgia, as per report in the June issue of the *Southern Medical and Surgical Journal*, Prof. W. F. Westmoreland "reported success in restoring respiration in animals, when chloroformization had

been carried too far, by artificial respiration, effected by the introduction into the trachea of a large elastic bougie, through which air was forced by common hand-bellows."

Camphor as an Antidote to Strychnine Poisoning.—In the *Pacific Medical and Surgical Journal*, for June, Dr. M. T. Dodge reports a case of poisoning with strychnine, entirely relieved by the administration of camphor. According to the report, *five grains* of strychnine had been taken *three hours previously.* Ten grains of camphor were given in emulsion, and repeated every half hour or hour for seven hours, when the spasms entirely ceased, and the patient rapidly recovered. It would certainly be a fortunate discovery should camphor be found to be a reliable antidote to the poisonous action of strychnine. The case reported lacks at least two essential points to make it available as proof upon this point. It is thought by many that much of the strychnine in use is nearly inert, and, if taken as claimed, there is no proof that the article was genuine. More than this, there is no proof, but the patient's statement, that the five grains of strychnine had been taken at all. There is certainly one suspicious fact in the case, that must in some measure detract from our confidence in the antidotal power of camphor. *Three hours* had elapsed from the taking of the poison before remedial aid was had, and yet the patient was sitting up, and presented no very alarming symptoms. Prof. Wood says that, in cases of poisoning from strychnine, the alarming symptoms usually follow the administration in from ten minutes to half an hour. One of two things is evident: the five grains were not all taken, or the poison was not of standard strength; either would effect the result, so far as relates to the antidotal powers of camphor.

Collodion in Strangulated Hernia.—In the *American Medical Gazette*, for June, Prof. E. S. Cooper, of San Francisco, has an article upon the reduction of strangulated hernia by the application of collodion. He reports one case in which it succeeded after taxis failed. "A thick coating was applied all over the hernial tumor, which being permitted to dry and contract, another was put over it. After making two or three applications and witnessing the result, the patient was left in charge of a student, who was directed to apply the collodion (an article of much greater consistency than that in general use) every ten minutes, until my return. This course being continued for nearly two hours, the tumor was found soft, and reduced in size one-half or more—strangulation being, in fact, removed. The small portion of the hernial sac remaining out of the abdominal cavity was returned without the least difficulty."

Prof. Cooper gives the following conclusions: "1st, That we will always be safe in resorting to the use of collodion in strangulated hernia before using the knife, which, at best, is a dangerous remedy.

2d. If the collodion fails, the case will be none the worse for an operation, because two hours will generally be a long enough time in which to give it a trial; and during this period no more fluids can accumulate in the tumor, but on the other hand, part of those already collected will be sure to be forced out, whether strangulation is subdued entirely or not.

3d. That taxis should never be resorted to before collodion has been applied, because, in the former, bruising of the parts is liable to occur, but not in the latter, which, in addition, is much the more potent agent in pressing the blood out of the veins of the part, and thereby relieving the strangulation."

Strictures of the Urethra.—In the *American Medical Gazette* for June, Prof. James Bryan has an article upon the treatment of this troublesome and hitherto seldom-cured affection. For *fifteen years* past, Prof. Bryan has been treating strictures of the urethra by *internal section;* a mode of treatment which, he says, in that time, and with rather extensive experience, he has never known to fail. We must refer our readers to the original article for a description of the instrument used. He concludes his paper with the following remarks: "The more cartilaginous and impervious the stricture, the better; and I have yet to see a case in which I have failed to open a passage to the bladder. It is well known that the treatment by caustic, dilatation, and external section, are all followed, from time to time, by severe accidents, such as increase of the stricture, false passage, with urinary infiltration, fistula, &c., &c. I have, as yet, met with none of these things in this treatment, nor are any reported by Civiale, Strafford, Amussat, Dorner, Jameson, or others. *A priori* reasoning doubtless deters many from attempting the practice; but after a careful review of the results of other modes of practice, not excepting Symes' operations, I am clearly of the opinion, that in a majority of the cases of permanent stricture, the treatment by internal section, in the hands of careful and judicious surgeons, is by far the safest, most free from danger, most certain, and most satisfactory."

Typhoid Fever.—Dr. Levick, physician to the *Pennsylvania Hospital,* delivered a clinical lecture upon typhoid fever, which is reported in the *Medical and Surgical Reporter* for June 9th, in which some opinions are expressed which can never be too frequently repeated, especially to the younger members of the profession. Upon the points

discussed by Prof. Levick, our readers will remember that we have previously expressed opinions. In regard to cathartics, his views are so exactly like those we gave in a review of a work on Enteric Fever, published in the September issue of the MONTHLY, that we are pleased to adduce so high a corroboration. At first he would advise a dessert-spoonful of castor oil; and "after this," he says, "unless there be protracted constipation, I rarely give a cathartic of any kind, and do not trouble myself or the patient if he should not have a daily alvine evacuation. I have never believed that it was necessary to open the bowels every day, or even every second day, when they had been thus acted on in the beginning, and while the patient was suffering from this disease." In regard to food, he makes a few appropriate remarks, and says it "is as necessary for the sick as it is for the well." He adds, "The patient, not feeling the need of food, or with his perceptions and faculties so blunted by disease that he does not call for it, is allowed to pass hours, if not days, without food, or is fed with innutritious slops, which, unfit for the well, are even more so for the sick. Dr. Graves, long ago, called attention to this subject." The following is not less to our liking: "So, too, with the early, cautious administration of wine-whey. Do not wait until the patient has got into that condition in which, as the books express it, 'symptoms of prostration present themselves,' when stimulants are imperatively demanded; but so supply food and gentle stimulation that your patient will not fall into this condition, from which it sometimes happens that all stimulants are unable to raise him."

In regard to medicines we will instance only a remark or two. To quiet excessive nervous excitement, and procure rest at night, Prof. Levick would administer two tea-spoonsful of solution of sulphate of morphia, and one of spirits of nitre, at night. The first treatment which he would advise immediately following the opening of the bowels, in a majority of cases, is "one grain of blue mass, one-sixth of a grain of ipecac, and one-sixth of a grain of opium, every two hours." The mercurial is early omitted, the ipecac and opium being continued, and wine-whey, quinine, &c., as the case may require, are now early brought to bear. With the first tendency to any considerable and persistent dryness of the tongue, turpentine is resorted to, of which medicine he speaks in the highest terms.

We believe the great secret of success in the treatment of typhoid fever, as in all other diseases, consists in a thorough observation of the case, and, by timely remedies, *preventing* alarming symptoms. Those who medicate largely with specific remedies without distinct in-

dications, and those who trust their cases to nature wholly, Forbes like, meeting with remedies, only unnatural conditions and extra bad symptoms, alike fail in securing to their patients the full benefit of the healing art. It is better and far easier to *anticipate and ward off* a dying condition than to *reclaim* a patient from it.

Acute Rheumatism.—Prof. Levick, of the Pennsylvania Hospital, has for a little time back been experimenting with the chloride of propylamin. The reports are given in the several issues of the *Medical and Surgical Reporter* for June. Speaking of a certain typical case, he says, "I do not hesitate to say that I have never seen as severe a case of acute rheumatism so soon restored to health as this man has been; and without being prepared to decide positively as to the value of the remedy we have used, I feel bound to state that in the cases in which we have tried the chloride of propylamin the patients have regained their health much earlier than under the treatment ordinarily pursued."

Consumption.—In the clinical remarks of Prof. Levick, above referred to, we find the following, which is a little refreshing, now that cod-liver oil is going out of fashion, stimulants being decried by many, and blood-letting, &c., being advocated by a few. He says, "Good food easily assimilable, living in the open air, protected from exposure by suitable clothing, the *moderate* use of stimulants, such as ale, porter, or even a little good old whiskey, and as a medicine cod-liver oil, we believe will do more for the consumptive than any other mode of treatment."

We have no doubt of the propriety of stimulants in most cases of consumption, and, because of the difficulty in getting always pure whiskey, we have, of late, been using *malt wine*, prepared by John McKnight's Son, Albany, N. Y., and so far have been well pleased with the result.

Diphtheria.—In the *Medical and Surgical Reporter* for June 30th, Dr. A. M. Sigmund has an article upon diphtheria, erysipelas, &c. He believes that the causative poison of diphtheria, erysipelas, and scarlatina is the same in the three diseases. Thus he says, "I believe that the same constitutional poison which produces diphtheria and erysipelas is also capable of producing scarlatina, for I have seen in the same family persons attacked, some with diphtheria alone, some with it and erysipelas, and others, again, with the anginose variety of scarlatina. The precursory symptoms were almost the same, although in the case of scarlatina the symptoms were more violent and decided, and the febrile excitement much greater." Having a reasonable ex-

perience with diphtheria, we believe it to be a distinct disease. Under our observation it has resembled typhoid fever more than any other disease. We hope soon to find time to give the result of our observations upon diphtheria.

Rheumatism.—In the *Medical and Surgical Reporter* for June 30th, Dr. D. W. Bland has an article upon the treatment of acute rheumatism with the iodide of potassium. The following is the formula which he advises:

" ℞.—Potassæ Iodidi,	ʒj.	
Vin. rad. colch.,	℥ss.	
Sulph. morph.,	gr. ij.	
Aquæ,	℥vss.	M.

A dessert-spoonful to be taken three times a day." As a local application he advises " a solution of muriate of ammonia in the proportion of ℥ss. to a quart of water."

Singular Case of Loss of Hair.—In the *Boston Medical and Surgical Journal* for June 14th, Dr. H. O. Jewett reports the case of a boy " that when an infant had hair like other children, but when 4 or 5 years of age, and while in perfect health, it began to fall off, and in a few weeks left him completely hairless." Eyebrows, eyelashes, as well as every hair upon the head, came out; and five years later, at the time of the report, there was not the least evidence of any natural effort at reproduction.

Fœtus Carried Twenty-two Months Beyond Term.—Before the Boston Society for Medical Improvement, as per report in the *Boston Medical and Surgical Journal* for June 14th, Dr. Storer reported the case of a woman who carried the product of conception for more than two years and a half ! At the full period she " was supposed to be in labor, and sent for her family physician to attend her." " The pains, however, were not constant, or of much force, and soon subsided entirely, never to return as true labor-pains." Twenty-two months later she died, having carried the product of conception the while, and menstruated *irregularly* until the time of her death.

" At the *autopsy* a very extensive adhesion was found between the fundus of the uterus and the small intestines, and also between its side and the sigmoid flexure of the colon. The Fallopian tubes and ovaries were found in their natural relations to the uterus. The uterus contained a fœtus in the natural position for delivery, but no trace of a placenta could be found. There was about a pint of thick yellow fluid in the uterine cavity. An opening in the left side of the uterus communicated with the interior of the colon, and the left hand and

forearm of the fœtus were passed into the bowel, as far as the elbow. Fæculent matter had passed into the cavity of the womb. The os uteri was entirely closed, and no trace could be found of it upon the inside."

Tracheotomy in Croup.—Before the Boston Society for Medical Improvement, as reported for the *Boston Medical and Surgical Journal* for June 14th, Dr. Bigelow expresses his opinion upon the above subject. He says that "in very young children it rarely avails, while in older ones it may be of considerable value; that after the age of three years the chance of life is, perhaps, increased by it; that after that period the ratio of recovery with operation probably increases with the increase of age; but that in *very young* children recovery after operation is rare; probably not greater than without it."

Quinine and Abortion.—Edward Warren, M.D., Editor of *The Medical Journal of North Carolina*, in the May issue of that journal, commenting upon an article from our *Summary*, says: "We have found nothing more likely to produce abortion in pregnancy than the administration of large doses of quinine."

Effects of Medicine on the Teeth.—Many people attribute the decay of their teeth to the effects of medicine. A common expression with such is, "since my health has been bad, I have taken so much medicine that it has ruined my teeth." Such forget that good health is all-important to the integrity of the teeth—they do not imagine that it is *disease* and not *medicine* that causes their decay. In the *Dental Cosmos*, for June, Dr. Robertson has an article upon the *effects of disease on the teeth*, in which the above fact is distinctly stated. We rejoice to see a dental surgeon vindicating the honor of medicine. Dr. Robertson, while he admits that the "*surroundings*" may be injured, denies even that calomel has any direct influence in causing the decay of teeth. We quote one experiment. "Dr. Westcott, in his experiments, found that teeth placed in a mixture of calomel and water of about the consistency of cream, and allowed to remain there for four months, came out as bright and as clean as when they were put in. And some years ago I placed one tooth, thoroughly cleansed from all foreign matter, into a vial with fifty grains of calomel mixed with about two or three fluid drachms of saliva, and at the end of six weeks no change was perceptible even by the aid of a powerful magnifying-glass."

EDITORIAL AND MISCELLANEOUS.

—The Report of the Committee of the New York State Medical Society on Pharmaceutical Preparations, published in the June issue of the MONTHLY, has elicited from several quarters commendatory remarks. From one of our correspondents, Dr. D. P. Francis, of New London, Conn., we have received a communication, indicating a method of adulteration not heretofore mentioned. We extract from this letter the following:

"I have read with interest the Report of the Committee on Pharmaceutical Preparations published in the June number of your magazine. The investigation was well-timed. The increasing demand for this class of remedies and their rapidly extending employment render it expedient that the fluid and solid extracts should be subjected to a rigid analysis and experiment by competent hands, in order that their intrinsic merits and demerits, as well as their comparative value over other forms of remedies, may be brought to some authoritative and final standard. At the same time, it cannot escape the attention of the reader, that at present, the widest diversity of opinion prevails among the profession in regard to their efficacy, as well as the value of preparations of the same drug from different laboratories. To a certain section of this report my attention was particularly drawn. In the language of the committee, 'it is very clear that the strength or value of the same drug, from the same makers, is not constant.' It is also stated, that 'some complain of their inequality, and it is no doubt owing to this fact that such different opinions are expressed concerning the extracts of the same drug. The committee, therefore, recommend extreme caution on the part of the manufacturers in their selection of material.'

"Now, while I admit that these objections do exist, (and tinctures are by no means free from them,) I believe that the cause may be successfully sought for, in a large number of instances, in a different quarter. I allude to the fact of their adulteration by retailers. If my own experience furnishes any just data, I think I am safe in saying that this reprehensible practice is carried on, (partly from a disbelief in the superiority of extracts over tinctures, and partly from pecuniary considerations,) to a greater or less extent, in nearly every town and city in the country. The empty or partially exhausted bottles of the manufacturers are frequently filled with tinctures and saturated solutions, and dispensed at the counter as 'Fluid Extracts.' So often

have I known this to be the case in my own practice, that I have at last determined to procure my supplies direct from the manufacturers; and thus far I have no reason to regret this determination. The presence of sediment, which, say the committee, is frequently noticed in the bottles, 'as they stand on the shelf of the apothecary,' may also, I believe, be referred to the practice of forming solutions from the solid extracts without filtration. In the preparations of the Messrs. Tilden & Co., when procured direct from them, I find all that can reasonably be expected of a medicinal plant. I presume the same may be said of the preparations of other makers, but I have not tried them. I would, therefore, respectfully urge upon the profession the propriety of inquiring carefully into the character of the fluids they purchase or prescribe; for only by this process can they hope to suppress a despicable and pernicious practice, which, while it enriches the unprincipled by tampering with the health of patients, throws unjust imputations on the American laboratories."

— Dr. Addison, the late distinguished Physician of Guy's Hospital, died June 29, in the 67th year of his age. Within a few months the profession of England has lost some of its greatest ornaments—Bright, Todd, and now Addison. Dr. Addison was born near Newcastle, took his medical degree in Edinburgh, and then went to London. He was a pupil of the celebrated Bateman, and himself became an acknowledged authority upon skin diseases. The splendid collection of wax models of skin diseases in the Museum of Guy's Hospital were made under his superintendence. Dr. Addison was not a voluminous writer, most of his communications being found in Guy's Hospital Reports. Like his fellow-laborer in the same field—Dr. Bright—his name will be associated with a form of disease his clear and acutely discriminating mind was enabled to detect in the labyrinth of diseased textures which were constantly submitted to his examination. The disease of the supra-renal capsules, called by him *melasma supra-renale*, will hereafter be known as Morbus Addisonii, a name given to it by Prof. Trousseau as soon as the lesion designated by its discoverer was recognized in France. This was undoubtedly Dr. Addison's greatest work, and gave an impulse to the study of the functions of the supra-renal capsules which has been subsequently thoroughly investigated by such distinguished physiologists as Brown-Séquard, Harley, Vulpian, and Virchow.

— Dr. Green's "Favorite Prescriptions of American Practitioners" has been translated into French, and has received a highly favorable notice in a recent number of the *Union Médicale.*

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ESSAYS, MONOGRAPHS, AND CASES.

Treatment of Phthisis by the Chlorate of Potash; with Observations on Oxygen and Ozone as Therapeutic Agents. By E. J. FOUNTAIN, A.M., M.D., Davenport, Iowa.

"Oxygen is the leaden weight or bent spring which keeps the clock in motion; the inspirations and expirations are the motions of the pendulum which regulate it."—LIEBIG.

(READ BEFORE THE AMERICAN MEDICAL ASSOCIATION, AT ITS THIRTEENTH ANNUAL SESSION, HELD AT NEW HAVEN, JUNE, 1860.*)

In discussing the properties of the chlorate of potash as a therapeutic agent, I have formerly ventured the prediction, that it would be found a valuable remedy to arrest the development of tubercles, and promote the absorption of those already formed, when not too far advanced.

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* EXTRACT FROM THE REPORT OF THE SECTION ON PRACTICAL MEDICINE AND OBSTETRICS.—"A voluntary paper on the Treatment of Phthisis by the Chlorate of Potash, with Observations on Oxygen and Ozone, as Therapeutic Agents, was then read by the author, Dr. Fountain, of Davenport, Iowa. It was listened to with much attention, and after some discussion, it was

In the July number of the *N. Y. Journal of Medicine*, 1859, I called the attention of the profession to the importance of meeting a frequently occurring indication arising in the progress of many diseases from *imperfect aeration of the blood;* and reported cases in illustration of the fact, that in the chlorate of potash we have an agent fully capable of filling this indication. The cases reported were at once demonstrative of its power and reliability in this respect, and also of its great practical utility under circumstances so unfavorable as to preclude all hope of recovery by any other treatment. In addition to this, I endeavored to establish the theory, that in many instances where the blood is not deficient in its usual supply of oxygen, absorption of many organic products may be promoted by rendering the blood more highly arterialized through the agency of the chlorate of potash. Among these, were included tubercular deposits, as these were believed to be the result of an imperfect elimination from the system of the products of organic decay of the tissues of the body, and are composed principally of protein compounds, which are rendered soluble by the addition of one or two equivalents of oxygen, converting them into the deutoxide or tritoxide, and permits their absorption by endosmosis into the adjoining vessels—it was suggested that the chlorate of potash might be found a valuable remedy by supplying the blood with an excess of oxygen sufficient for this purpose. Although the disease until quite recently has been comparatively rare in Iowa, yet I have had the opportunity of testing the theory in the following cases—with how much confirmation the profession must decide.

"*Resolved*, That the Section has listened to the paper with deep interest, and suggest that the paper be referred back to the author, with the request that he pursue his investigations and report to the next meeting of the Association."

This request of the Association is my apology for the publication of the Essay, by which the purpose of the above resolution can be best accomplished.

Whatever may be the result of this method of treatment, the cause of medical science cannot but be advanced by any well-directed investigation relating to such a widely prevalent and fatal disease as Tubercular Consumption. Hoping I may have contributed something to our stock of knowledge on this subject which will lead to practical, good results, and attract the attention of the profession to the investigation of the value of oxygen in its diversified application as a remedial agent, I respectfully submit the following, not as a conclusive demonstration of any theory or practice, but as suggestions which may lead others to test their value and prompt investigation in a new direction. The author will be pleased to receive contributions on the subjects referred to, from any of his professional brethren, that sufficient material may be obtained for a report before the next meeting of the American Medical Association.

E. J. F.

CASE I.—Miss B——, a young lady, aged 19, recently from the East; strongly predisposed to phthisis by both parents, each of whom died with this disease while she was very young.

About the first of October, 1859, she had a fall, producing considerable concussion of the body generally, but apparently no serious injury. Symptoms of fever followed in a few days, which were at first thought to be the result of the fall, but soon they were developed into evident indications of autumnal malarious fever, with slight periodic remissions. Treatment appropriate to this condition was adopted, and followed by an arrest of fever, and apparent convalescence. After being up a few days she was again obliged to take her bed by a return of fever of a low continued type, accompanied by a dry cough, which latter symptom soon attracted paramount attention. The fever now lingered uninfluenced by any anti-periodic treatment, the cough in the mean time increasing in severity. At this period, no decided symptoms of tubercles could be detected by auscultation, and yet there was no evidence of bronchitis or pneumonia. I faithfully tried all manner of expectorants and sedatives without benefit. The cough was always aggravated by opiate preparations, and even the remedies to promote expectoration recommended by Dr. Jacobi, oxysulphuret of antimony and hydrochlorate of ammonia, were each tried, with no better result.

Her strength steadily failed, the cough becoming more persistent, and the fever assuming the character of hectic. An appreciable degree of dullness was now recognized under the clavicles on each side—more especially on the left, where the respiratory murmur was less distinct than natural. Knowing how strongly predisposed she was to phthisis, and unable to account for her symptoms and their persistence on any other view, I now became satisfied that tubercles were being rapidly developed. This was about three weeks from the commencement of her sickness. Churchill's remedy of the hypophosphites of lime and soda and cod-liver oil were now administered, and other adjuvants, as symptoms indicated; but the disease progressed rapidly, and without any abatement from this treatment. Marked hectic fever supervened; increased cough; profuse night-sweats; rapid emaciation and loss of strength; and sleepless nights. The rational symptoms were more characteristic and well defined than the physical; but the latter, though somewhat obscure, were sufficiently evident, in connection with the above, to render the nature of the disease unmistakable. The case excited unusual anxiety in my mind, as the patient was a near relative, and, for a time previous to her sickness, a member of my own

family. Every possible effort of my own, aided by the advice of my professional friends, was made for several weeks following; but steadily the disease progressed, and soon was impressed in unmistakable character upon her countenance, and manifested by all her symptoms.

About six weeks from the first attack of her illness, despair of her recovery began to settle upon the minds of her friends and medical attendants, and the patient herself could no longer be buoyed up by any hope. As yet no expectoration had appeared, and it seemed as if the disease would terminate fatally, as it does in some rare cases, from the depressing influence of the tubercles before reaching the stage of suppuration. She had at this time scarcely strength sufficient to change her position in bed without assistance; no inclination for any nourishment; extreme pallor of the skin, changing to a bright hectic flush every afternoon; rapid pulse and respiration; constant and harassing cough; profuse night-sweats; sleepless nights; and extreme prostration. The "fell destroyer" had evidently, to our minds, marked her as its victim; and though anxiously and faithfully applying every approved method of treatment, we were conscious of seeing her yielding rapidly to its power, in defiance of every effort to stay its progress. Finding all treatment utterly futile, it now occurred to me for the first time that I had, on theoretical views, suggested the use of the chlorate of potash in such cases, and I now determined at once to give it a trial. I had a number of packages of the chlorate put up, half an ounce in each. One of these I dissolved in about a pint of water, and directed her to drink it *ad libitum*, so that the whole of it should be taken in twenty-four hours. Then another to be prepared and taken in the same way—half an ounce each day, and no other medicine. The change was like magic, using the expressive language afterwards frequently repeated by the patient. She began the first day to experience decided relief, and in forty-eight hours the cough had so far abated, and the oppression of breathing reduced, that she slept well for the first time for several weeks. The last four nights preceding this treatment had been passed in extreme restlessness—almost constant cough, and without any sleep whatever. The respiration and pulse diminished in frequency, night-sweats and fever disappeared, and her appetite and spirits revived. In four days her cough had almost entirely disappeared, and not a trace of it was left in one week after commencing this treatment. By this time she began to sit up, to eat with a good appetite, and sleep soundly every night. Rapid convalescence followed. In another week she was so far restored that she left her sick-room permanently, and has since remained in the full

enjoyment of health. She took half an ounce of the chlorate of potash every day for nearly two weeks, and gradually reduced the quantity during the week following, when it was discontinued altogether. Not a particle of cough has ever returned, and no symptoms of her recent alarming illness. She has since returned to her Eastern home, in Newark, New Jersey, perfectly restored to health.

Case II.—Mr. M——, aged 25, family consumptive on mother's side, applied to me for treatment, Nov. 5th, 1859. Had been living for about two years in Omaha, Nebraska. Health usually good during a number of years past, until within the three or four months previous to calling upon me. Has been coughing for three months, during which period he has expectorated blood several times. Strength gradually failing, losing flesh, and appetite entirely gone. He assured me that for two months he had not taken nourishment sufficient to support properly the strength of an infant; and his emaciated and bloodless appearance corroborated the statement. He had some soreness in the throat, and complained of pain occasionally on the right side. Cough very frequent night and day, but very seldom any expectoration. His debility was so great that he fainted from the effort of standing erect to permit a physical examination of the chest. The left lung appeared to be perfectly healthy, but there was appreciable dullness over the middle and upper lobes of the right. Over this region of dullness the respiratory murmur was very feeble and indistinct, and the expiratory sound nearly equal in duration. His respiration and pulse were increased in frequency on the slightest exertion, and he complained much of great oppression in breathing. He had not the slightest desire to eat at any time, and seldom more than tasted food.

Treatment.—In this case I decided to test the chlorate of potash alone before giving anything else, that I might not confound the effects of different remedies, and thus be able to determine more accurately the properties of the one under investigation. I therefore prescribed half an ounce to be taken daily in the same manner as in the preceding case. This was on the 5th of November.

Nov. 8th.—Decided improvement; cough less; oppression greatly relieved.

10th.—Still improving, and beginning to have a little appetite.

Satisfied by this time that the chlorate was having a decided effect in the manner I anticipated, I now thought it proper to aid the treatment by prescribing iron and quinine in small doses daily, and continued the chlorate of potash the same, half an ounce each day.

6th.—Cough very slight; no pain in the chest; full inspiration taken with less difficulty; general appearance decidedly better.

19th.—Improvement continues unabated. From this date I reduced the chlorate of potash to three drachms daily.

23d.—Patient considers himself almost well. Appetite good; no cough; gaining strength and flesh quite rapidly; still a slight degree of dullness on the right side; but respiratory murmur more natural. Continue the chlorate of potash in drachm doses three times a day, and omit the iron and quinine.

Soon after this he left on business for the East, and on the 18th of January following, he addressed me a letter relating to his health from Washington City, D. C. He had continued taking the chlorate of potash most of the time. He invariably felt worse by omitting it, and renewed strength and general improvement when he returned to its use. In this letter he says: "I have no cough, but occasionally some difficulty in breathing; but not near so much as when you first saw me at Davenport in the fall. My strength has improved a great deal, and generally my appetite is quite good."

CASE III.—Mr. H——, aged 34, placed himself under my care early in November, 1859. He had the appearance to every one of a man sinking under the influence of confirmed phthisis. To this he was predisposed from his father, who died young with this disease—mother still living and well. A gradually increasing cough and failing health had been gaining upon him for the past five years.

Once during this period he had improved under the use of cod-liver oil and phosphate of iron. Free, and quite profuse, hæmorrhage from the lungs once, and slight traces of it a number of times during the past year. When he applied to me he was conscious of losing strength very fast. Marked emaciation, and unhealthy expression of countenance; very frequent cough, but seldom any expectoration; no appetite; respiration hurried and oppressed; pulse seldom below 90; moderate dullness on the right side, over the infra-clavicular region; no râles, but respiratory murmur indistinct and irregular. As he had once been benefited by cod-liver oil and the phosphate of iron, I first prescribed this same treatment, thinking it might again have a similar effect. This was continued faithfully for about two weeks without any material benefit, when I directed it to be discontinued, and prescribed the chlorate of potash alone, half an ounce daily, as in the above cases. In less than a week he assured me that he felt a decided benefit from the treatment. The improvement continued steadily from this time, and he completely regained his health and

strength in less than three months. *He took half an ounce of the chlorate of potash daily for six weeks*, and two drachms each day for the succeeding four weeks; since which time he has taken it only occasionally, and in smaller quantity. At the present time of writing, (April, 1860,) he is actively engaged in business, in good strength and flesh, having no cough, except a trifle from a recent cold; complexion perfectly healthy, and appetite good. His own feelings and general appearance indicate a perfect restoration of health.

Remarks—Although these cases are not sufficient to verify the prediction which I ventured to make nearly a year ago, they certainly furnish strong presumptive evidence in its support. Of themselves they are sufficiently striking to merit the attention of the profession, irrespective of any particular theory which prompted the treatment. But cases reported can be regarded as contributions to science only as they sustain or reveal some principle of general application. In these cases, although the treatment was purely experimental, it was not empirical; for the chlorate of potash was given on the assumed principle of *conveying oxygen to the blood*, by which I expected to relieve the lungs of a portion of their task; increase the vital power of the blood, and render it more capable of faithfully performing all its functions; and by which tubercular deposits might be arrested, and absorption of those already formed promoted. So far as I have yet been able to test the practice, the results have more than realized my anticipations, and sufficient at least to justify me in laying the subject before the profession. Whatever may be the result of a more enlarged experience, some important facts are established by the foregoing cases, and others which have been elsewhere reported.

1. The chlorate of potash can be given in large doses every day, for a long period, without injury.

2. It aids the functions of respiration, by supplying the blood with oxygen.

3 It operates as a natural *tonic*, *alterative*, and *blood depurant*, by increasing the supply of that element which is the most active agent of nature in the chemical changes which take place in the laboratory of the human system.

I will now add, that in the practical application of these principles, it is my belief, which may or may not be confirmed by the experience of others, that it is a peculiarly appropriate remedy for the *early stages of phthisis*, by which the resolution and absorption of incipient tubercles may be effected, and their further deposit arrested. Even where the disease has progressed to the second stage, I have found

patients derive great benefit from the use of this remedy; more, indeed, than from all others, single or combined. I cannot, however, expect it to be of permanent benefit, only in the early stages of the disease, before there is any disorganization of the lungs or suppuration of the tubercles. To all who are laboring under the symptoms of this disease, before it has progressed to such an extent, I would recommend the liberal and constant use of the chlorate of potash, aided by appropriate hygienic treatment, in which exercise and pure air hold the rank of first importance. Half an ounce daily is the quantity I usually give, when I wish to produce a decided effect for any purpose, and this can be taken certainly for many weeks with impunity; but when I have occasion to give it for a long time, I find three drachms a day can be depended upon as sufficient in most cases. After all symptoms of phthisis have been arrested by this treatment, it should still be continued for a time in moderate doses, and always resumed as soon as the slightest symptom of its return is manifested. In addition to this treatment, I would recommend as a daily beverage a trial of liquids artificially charged with oxygen gas.

If it should be asked why not give the oxygen directly by inhalation, the answer is, that too much irritation of the bronchial mucous membrane will be produced by any excess of the natural proportion of oxygen in the air that is breathed; and further, that in phthisis and other pulmonary affections, it is desirable to *relieve* the lungs of a portion of their duty—not to increase it by over-stimulation, and imposing an additional burden. Moreover, the inhalation of oxygen has been thoroughly tested long ago, and abandoned as useless. The following is from a paper of Dr. H. Bence Jones, F.R.S., &c., published in Part XXV. of *Braithwaite's Retrospect:*

"No sooner was oxygen discovered, than an attempt was made to apply it as a medicine. The Pneumatic Institution, as it was called, was founded by Dr. Beddoes, for the purpose of using oxygen as a remedial agent for all kinds of disease; but though it was supported by the energy and truthfulness of Dr. Beddoes, and by the sense and skill of James Watt, the great engineer, who applied himself with the greatest zeal to the carrying out of the mechanical process of administering the oxygen to the patients; and though it called forth the talent of that great chemist to whom we are so largely indebted—Sir Humphrey Davy—yet it utterly failed in accomplishing the object for which it was established. No satisfactory conclusions were arrived at; no power was obtained of using the oxygen as a remedy, and the undertaking came to naught, not because the oxygen was impo-

tent, (for it is the most powerful agent in nature,) but because the means of applying it advantageously were unknown; and they remain equally unknown now. We know no more now respecting the means of applying it as a remedy, than was known in the time of Dr. Beddoes and Sir Humphrey Davy. At present all attempts to employ it as a remedy must be described as having altogether failed."

Thus it will be seen that oxygen has been thoroughly tested for remedial purposes by men of the highest scientific attainments, and abandoned as impracticable, because no means of applying it advantageously could be discovered; and I think it is conclusive, that by no method of inhalation can it be administered with benefit. The observation of Dr. Jones, that the means of applying it advantageously "remain equally unknown now," undoubtedly expressed the truth at the time it was made, in 1852; but it would not be true if made at the present day.

I think I have demonstrated in the paper before referred to, that oxygen can be administered in the form of a chemical combination for the purpose of aiding the operations of nature in arresting disease; and evidence has been furnished of its powerful influence in this direction, proportionate to its potency in the world at large; and may yet be found sufficient to realize the sanguine hopes of Beddoes, Watt, and Sir Humphrey Davy. The genius of man has made the lightning of heaven subservient to his will, as he makes it the swift messenger of his thoughts; and strange would it be if an agent so powerful and so full of life-sustaining properties as oxygen should not be brought into subjection to antagonize the effects of disease.

Of late, we see reports of *ozonized oil* being administered with benefit in phthisis. In my opinion, it is no more nor less than so much oxygen administered with the oil. The oil is charged with oxygen, and exposed to sunlight, and then it is called ozonized oil. This is an arbitrary assumption, and not the deduction of close analytical reasoning or experiment. There is a cloud of mystery connected with the subject of ozone which modern science has not yet removed by reports heretofore made on the subject.

My attention has been directed to this subject in connection with recent investigations in relation to oxygen as a therapeutic agent. My observations have led to the development of a theory of the nature of ozone, which I believe to be more in accordance with well-known laws in natural philosophy than any heretofore advocated; and while it embraces, as I believe, all the facts which have been observed in relation to the subject, it clears up many of the difficulties which

have been acknowledged to belong to it. Its practical bearing upon the subject under consideration will be apparent from the sequel.

What is ozone ? To this query scientific men have given different answers, and still entertain a discrepancy of opinion.

Schönbein has regarded it as a peroxide of hydrogen, but more recently he maintains that "there are two kinds or allotropic modifications of active oxygen, attending to each other in the relation of + to —; *i. e.*, that there is a positively active and a negatively active oxygen—an ozone and an ant-ozone, which, on being brought together, neutralize each other into common or inactive oxygen."—*Amer. Jour. of Science and Arts*, vol. 27, p. 19.

Dr. Pickford calls it a teroxide of hydrogen.

De la Rive and *Berzelius* consider it to be nothing but allotropized oxygen.

Dr. Prout regards it a deutoxide of hydrogen, formed by the excess of the twenty per cent. of oxygen, which, he says, there ought to be in the atmosphere, associated with the vapor of the atmosphere.

Scoutetten, and many others, believe it to be electrified oxygen; and by others, still, it is regarded as simply oxygen thrown into a state of activity by electricity.

Dr. James H. Pickford, in his recent and most excellent work on Hygiene, advocates the same theory as Dr. Prout, namely, that the excess of oxygen in the atmosphere, at particular times and places, is converted into ozone, by reason of this very excess. Why this should be the case, he does not pretend to explain. The opinion cannot be sustained by sound philosophy, and it is surprising that it should be advocated by Dr. Pickford, when, in his same work, he has stated facts which prove its fallacy. According to this theory, the relative proportion of oxygen in the atmosphere must be constantly varying, and upon this variation must depend the presence or absence of ozone; and none can exist where there is not an excess above what is assumed to be the exact normal proportion of twenty per cent. Let this theory, or hypothesis, rather, be compared with the following passages from Dr. Pickford's work.

On page 118, he says: "By the reciprocal action, therefore, of plants and animals, the composition of the atmosphere is preserved *nearly absolutely unchanged*." (The italics are thus made by the author of the language quoted.) This excess of oxygen he attributes to the action of vegetation exhaling it into the atmosphere; and yet, on page 118, he again says: "Supposing the earth to be peopled by 1,000,000,000 men, and its animals to be equivalent to 3,000,000,000

more men, and plants to have *ceased from their functions* over the entire surface of the earth, it may be shown that the oxygen of the atmosphere would not be diminished to a greater extent than $\frac{1}{8000}$th part of its entire weight during a century; and further, that no sensible effect would be produced on Volta's endiometre in a less period than 10,000 years."

These facts need no comment. They are certainly sufficient to demonstrate that ozone cannot be occasioned by any varying excess of oxygen in the atmosphere. Moreover, were this a true theory, ozone should be found always more abundant within and over dense forests than other places, which is not the fact; and over the ocean and the barren sea-shore, where it is most abundant, there should be none at all. In the face of facts like these, it is indeed surprising that such an opinion should be advocated by Dr. Pickford and Dr. Prout. I think I can make it apparent that the views of Scoutetten, Schönbein, De la Rive, and others, are also incorrect, and unequal to a satisfactory explanation of all the phenomena of ozone.

By these writers and the scientific world generally, it has been supposed to be a definite substance in some shape mingled with and floating in the atmosphere. This, I think, is not the fact. On none of these theories can any satisfactory explanation be made of at least two facts which I have observed.

1st. Ozone is not found within doors except in very slight traces, and generally not at all, however well ventilated the building may be; and

2d. It is not found under the deep shade of the forest. The observations of Dr. J. H. Rauch first called my attention to this latter fact.

During the warm months of last summer the ozonometer always indicated an abundance of ozone in the atmosphere immediately without the open window of my library, while within the same scarcely a trace of it could ever be observed, even when the windows were open and pure air circulating freely in the room. If it is something floating in the atmosphere, and forming a part of it, why will it not enter within a dwelling? and why does it not circulate with the air in the shade of the forest? and why, let me also ask, will it not circulate through an atmosphere which is perfectly dry? If no satisfactory answer can be given to these queries on any theory which has been mentioned, I think a rational explanation can be found in another which I am about to offer.

I shall venture to affirm that *ozone is simply oxygen in a nascent condition, produced naturally by electrolytic decomposition of the vapor of*

water in the atmosphere. It is a law in chemistry that all gases, when in a *nascent* condition, possess properties and powers which are peculiar to that state. In this manner gold is dissolved by the nascent chlorine generated in the *aqua regia;* and the bleaching power of chlorine is due to its strong affinity for hydrogen, by which the water of the dampened fabrics is decomposed, and the oxygen liberated; and this nascent oxygen, or ozone, is the true and proximate bleaching agent. As a disinfecting agent it probably acts in the same way, by decomposing the vapor in the atmosphere and liberating the oxygen.

Electrical currents are constantly and silently passing around the earth, following the direction of the sun, and upon the combined effect of the degree of intensity of these currents, the discharges of electricity from the clouds, and the amount of vapor, depends the varying proportion of ozone in the atmosphere.

It is not oxygen electrified or hydrated, but oxygen generated from the decomposition of water or the vapor of water; and it is ozone only at the time of this decomposition. It is not a thing of itself, which can travel with the air and be separated from it, but a manifestation of peculiar properties of oxygen when in a certain condition, which may be termed *dynamic;* and these properties can be manifested only at the time and place of the liberation of oxygen from some chemical combination. This will explain why it is that ozone cannot be produced in an atmosphere which is *perfectly dry*, and also why it is not found within a dwelling or under the shade of the forest. The currents of electricity at all times flowing through the atmosphere are interrupted and pass to the earth through the medium of any prominent structure or forest-tree. They pass down through the walls of our dwellings and circulate not in the atmosphere of our rooms, and therefore we find no ozone there; and the trees of the forest also act as conductors to these electrical currents, and thus prevent the development of ozone beneath them.

In the laboratory, by means of phosphorus, the phenomena of ozone can be made to appear without the aid of electricity, *but never without water.* And so in the atmosphere, ozone can never be produced by natural agencies without the presence of the vapor of water.

In the proceedings of the American Association for the Advancement of Science, held at Montreal, in 1857, Prof. Charles Smallwood says, that from his observations it would appear "that a *moist* and *humid* atmosphere was necessary for the development of ozone, and this may account in some measure for its more constant presence and its greater quantity in proximity to the sea."

In the Smithsonian Report of 1857, page 390, I find the following:

"In the electrolytic decomposition of water, the presence of ozone is manifested at the positive pole, *where the oxygen is given off*."

This confirms the theory now offered. We there have a most perfect exhibition of oxygen in a *nascent* condition, and consequently a constant manifestation of the phenomena of ozone. I will venture to say that the same phenomena will always be found in the presence of oxygen which is being generated from the chlorate of potash, or any other chemical combination.

On page 391 of the last-mentioned Report the writer says: "Electricity prepares the vapor of the atmosphere to oxydize further and form ozone; in like manner phosphorus effects the combination of the vapor of water with oxygen; but, as yet, we are not able to tell *how* it is done." May not this mystery be removed by referring all the phenomena of ozone to *nascent oxygen*?

In this experiment, it will be observed that ozone is produced without the aid of electricity, but the presence of water is essential. The same writer, Dr. Müller, of the University of Freiburg, says: "In perfectly dry air ozone cannot be obtained by means of phosphorus." He takes it for granted that ozone must be a compound of oxygen and water; but *how* such a combination is effected, and *why* it should manifest such powerful oxydizing properties, he is unable to determine; and these are the very difficulties which are avoided by the theory which I have offered. There is another difficulty in the way of believing it to be a compound substance of any kind. The great and peculiar characteristic of ozone is its powerful oxydizing property; and if it is a compound of oxygen and water, it cannot operate in this manner without itself undergoing decomposition; and this will be as difficult to explain as its first formation from the same elements. If oxygen, by the influence exerted in some unknown way by electricity, or phosphorus, is made to have such a strong affinity for water that it unites with it in the form of a chemical combination, what power compels it to forsake this alliance and fly so quickly to manifest this same remarkable affinity for other substances, with which it has no power to unite at other times? But where, it may be asked, is the nascent oxygen, in the experiment of generating ozone by phosphorus? Can we not find it in the supposition that the phosphorus decomposes the water, as we know it is capable of doing, under certain circumstances, forming phosphuretted hydrogen, and liberating the oxygen in a nascent state? And why may not this process go on for a limited time in a bottle containing air charged with the vapor of phos-

phorus and the vapor of water? Careful experiments, such as I have not had the opportunity of making, are required to determine this point to a certainty; but theoretically there is nothing in the way of believing this to be the truth, and there is much to substantiate it by analogy, while it certainly does less violence to our reason than the adoption of a theory for which it is admitted *no* explanation can be given. The analogy is found in the fact that, in order to develop the phenomena of ozone by any of the natural or artificial methods yet known, aside from this, two conditions are required: namely, the presence of water or its vapor, and something which is capable of decomposing water and liberating oxygen, as *electricity* or *chlorine*. When we reflect upon the known properties of nascent oxygen, and consider that its presence can always be accounted for, whenever and wherever ozone is found, the inference is almost irresistible that the two are identical—in truth, one and the same thing; and especially is it rational to admit this as a scientific fact, if by so doing we can resolve the subject under the operation of a simple and well-established law in chemistry, and divest it of all the mystery which has so long baffled investigation.

By this theory, we can understand why and how the presence of ozone can be made to appear through the agency of phosphorus, chlorine and electricity, in connection with water or the vapor of water. And what, let me ask, is there in common with these three totally distinct agents? One is an element existing in either a solid or gaseous state; the other is an element very different in character, and never solidified, while the third is altogether immaterial and imponderable; and yet each has the one, and only one common property of decomposing water and setting its oxygen free; (at least the fact will be admitted in reference to the two latter, and I believe it will be found to be true of the former.) Connect this with another fact, that ozone is produced by each of them only when water is present, and it appears to me the inference must be inevitable, that under all circumstances, ozone is nothing more nor less than nascent oxygen.

"The earth," says Dr. Pickford, "may be viewed as one huge electrical machine, of which the direction of the currents is from east to west." And again, he says, "The atmosphere abounds with electricity, which it derives from the thermo-electric agency of the earth." Why may not these ever-prevailing electrical currents and the more powerful discharges from the clouds be capable of decomposing the vapor of the atmosphere, as well as water itself is decomposed by the currents proceeding from the poles of a galvanic battery? Negative

and positive electricity in the atmosphere can operate in the same way as the negative and positive poles of a battery. Admitting the possibility of this, which can hardly be denied, and the solution of all the mystery of ozone becomes simple and satisfactory; and *why* it possesses such remarkable oxydizing properties is fully explained by a well-established chemical law.

The following experiment I have made a number of times, and always with the same result. Within a dwelling, a room is selected in which it is determined by careful tests that no ozone is present. If the atmosphere is dry, the vapor of water is added to it. In this, the ozonometers are exposed, and free chlorine allowed to escape and mingle with the air. If the amount of chlorine and vapor is sufficient, the characteristic discoloration of the paper will soon appear; and when it is less freely supplied, a longer time is required to produce the same effect. The discoloration is deeper and more rapidly produced by moistening the ozonometers with a little water. Now, what does this experiment teach us? It is this. The chlorine, by its strong affinity for hydrogen, decomposes the water, or the vapor, by which free oxygen is liberated in a nascent condition; this decomposes the iodide of potassium, setting free the iodine, which immediately unites with the starch, and produces the discoloration, which is considered indicative of the presence of ozone. In other words, ozone is generated from the decomposition of water through the agency of chlorine. In this particular, chlorine operates in the same way as electricity, each decomposing water and developing the phenomena of ozone by liberating the oxygen.

During the prevalence of thunder-storms ozone is unusually abundant in the atmosphere; and why? Because of the frequent and powerful discharges of electricity through an atmosphere filled with vapor and water. Much of the latter is readily decomposed, furnishing an abundance of nascent oxygen, or ozone. By this theory, too, we can understand why there is a greater amount of ozone observed in high elevations of the atmosphere when we approach the region of condensed vapor and the electrical influence of the clouds; and also, why it appears to be generally most abundant at night, when there is greater humidity in the atmosphere, near the surface of the earth, and a greater condensation of it upon the ozonometers.*

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* Scoutetten has demonstrated that nascent oxygen has the properties of ozone, which he attributes to an electrified condition of the oxygen, in accordance with his peculiar theory. The converse, that ozone is always nascent oxy-

According to the views which I have here expressed, I must regard the word ozone as an inappropriate name, or perhaps I should say we must learn to attach a new meaning to the word. It implies, as generally understood, a definite substantive of some kind, whereas it is only the manifestation of the property of something under peculiar circumstances, and can no more be isolated than can be an odor or a sound. The air in a certain state of vibration produces upon the organs of hearing the sensation of sound; and oxygen in a certain state of transition from one condition to another has the power of manifesting such properties as are expressed in the phenomena of ozone.

This view of the nature of ozone is not advanced from any desire to put forward a novel and unsubstantial theory, but because, with all due deference to the opinions of those from whom I have ventured to differ, and whose scientific attainments I do not presume to emulate, I believe it resolves the subject under a more comprehensive generalization, which is strictly in accordance with well-known scientific principles, and less arbitrary in character than any heretofore promulgated, and because it has a practical bearing upon the subject discussed in this report. If oils are charged with oxygen and exposed to sunlight, they contain oxygen still, and not ozone; and in the benefit observed from the administration of such oils, I find confirmation of my views in relation to the therapeutic properties of this element. In reference to the subjects I have considered in connection with the chlorate of potash, *the great remedy is oxygen;* and in whatever way it can be most readily administered and appropriated, that way is the best. We may yet find a better method than by giving the chlorate of potash, but at present I believe we have none. I doubt not, however, but such a discovery will be made, as the demand for it will become almost imperative, if the profession recognize in what I have offered a basis of treatment which is sound in theory and useful in practice.

It will be observed that the treatment of phthisis here recommended is based upon a peculiar theory of the pathology of this disease, namely, that the deposit of tubercles results from an imperfect elimina-

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gen, seems not to have occurred to him, nor any suspicion that it may always result from the decomposition of water. I also find a brief notice of another theory, closely approaching my own, that ozone may be formed of two or more equivalents of oxygen, one of which is given up in a nascent state to unite with bodies for which it has an affinity; but this will give no explanation of the fact that the presence of water is always essential as one of the conditions upon which the production of ozone depends.

tion from the system of the products of organic decay of the tissues of the body. This same view of the pathology of phthisis has recently been promulgated by Dr. Godwin Tims, in a work published in London, with the title of "*Consumption, its True Nature and Treatment.*" This work is noticed in the *Medical and Surgical Reporter*, of April 21st, under the caption of "*A New Theory of Phthisis.*" The author's pathological views are expressed in the following paragraph:

"The morbid condition which constitutes consumption, and which results in the deposit of tubercle, is an exaggerated activity of that part of nutrition called destructive assimilation, by which more atoms of nutrition are broken down, dissolved, and absorbed into the blood, than can be expelled by the excreting organs, until the blood has become so laden with the *débris* or *detritus* of the textures, as to precipitate and deposit it in the form of tubercle in favorable locations."

This new theory, as it is termed, is not of trans-Atlantic origin, as can be proved by the following passage from a paper on the medical properties of the chlorate of potash, published by the author in the *N. Y. Journal of Medicine*, in July, 1859. I quote from pages 24 and 25:

"Even tubercular deposits are known to consist principally of protein compounds, and we all know that the most effectual means of retarding or preventing their development consists in active out-door exercise in the pure air of the country, by which the system is supplied more freely with oxygen, *and the effete products of interstitial decay more rapidly removed.*

"Absolute deprivation of exercise, even in pure air, will lead to the deposit of tubercles. This has been well illustrated recently by Drs. Byford and Graham, of Chicago, in experiments upon animals; and confirmation of the opinion is found in the lungs of stall-fed cattle, the same as in the caged monkeys of Paris. The *rationale* of this can be readily understood when we consider that the circulation is of necessity retarded by want of exercise, and this involves *an imperfect removal from the system of such portion of the products of organic decay which results in the deposit of tubercles.* The same effect is more frequently the result of living in crowded and ill-ventilated apartments, where the inmates habitually breathe an atmosphere not only rendered impure by exhalations from the lungs, but also less vitalizing by containing a lower per centage of oxygen. Now, although the blood may circulate freely enough by means of exercise, yet it has not sufficient power, by means of a due proportion of oxygen, to carry on, in a healthy manner, all the functions of the body, *and in the same ratio, remove all its impurities. The most uniform effect of this retention is a*

tubercular deposit in the lungs or elsewhere; and this effect is most marked where the two causes are combined, viz., a lack of exercise while living in crowded and ill-ventilated apartments."

Whatever merit there may be in this "new theory of phthisis," as it has been termed, it is worthy of note, that it is not entirely original with Dr. Tims.*

In his therapeutics he has not yet, in my opinion, arrived at the *true* method of treatment, as the title of his book so confidently asserts. A part of his "combined treatment" by opiates, purgatives, animal oils, emetics, and blood-letting, undoubtedly results in a partial elimination of the *débris;* yet at the same time the purging and general depletion must remove from the system much that is essential to strength and health. Even this is not new. Thirty-five years ago blood-letting and emetics were the favorite remedies for phthisis with the celebrated Dr. Gallup, of the Castleton Medical College, Vermont, and I think this mode of treatment will hardly be revived successfully by Dr. Tims. Whatever of the impurities of the blood may be removed by such measures, a far greater loss of pure blood must accompany it; and in the reproduction of this, the previous loss will not guard against the reaccumulation of the detritus, but rather tend to

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* It will be observed that this theory differs materially from the views advanced by Dr. Ellis, of Boston, and Dr. Gibbs, of Frewsburg, New York. The former regards the tubercular deposit as a "degraded condition of the nutritive material," which is incapable of assimilation, and expressed by the latter as "the albuminous material" which is "incapable of cellular development." According to this view, the tubercle is formed of elements *which never constituted a portion of the living organism;* whereas by the theory advocated by the writer, and recently promulgated by Dr. Tims, it is composed of the "*products of organic decay*"—of the elements once forming integral portions of the normal living tissues, the *débris* of which is thrown into the blood more rapidly than can be removed by the excreting organs. By the former the disease has its origin in a retarded or perverted hæmatosis, as the product of vitiated nutrition; by the latter, in an imperfect or retarded process of elimination of effete material, which previously existed in the normal structure of healthy tissue; a difference involving a still wider diversity in the chain of causation relating to the pathology of phthisis, as well as indications in prevention and treatment. This imperfect elimination I have attributed to a *deficient supply of oxygen,* in connection with insufficient muscular exercise. Not only Andral and Simon, but almost every modern pathologist, has recognized the fact which I admitted in the statement that "tubercular deposits are known to consist principally of protein compounds;" and it is a matter of some surprise that one acting in the capacity of critic and reviewer should have been so inaccurate as to state that I had claimed originality for this opinion, and to confound ideas so essentially different as my own and those expressed by Drs. Gibbs and Ellis.

its increase by the debility which must be the result of the depletion. On the contrary, how much more rational to strike at the root of the difficulty, by aiding nature in her own way in freeing the system from this accumulation of the products of interstitial decay through the agency of her own great remedy; and then guard against its return by proper hygienic treatment. This involves the loss of no strength by depletion, and imposes no tax upon the system by violent measures, but operates by increasing the supply of that element which is a natural tonic, and the most direct and powerful of all blood-depurants.

I cannot conclude this paper without calling attention to the fact that much of the chlorate of potash is very impure. We have the excellent authority of Dr. Squibb to this effect, and I have recently been convinced of the fact by some observations in practice. It is needless to say that only a perfectly pure article can be depended upon. With such views of the properties of the chlorate of potash, until a better method of administering oxygen is found, let this salt, which so readily parts with its large proportion of oxygen, be freely used, and, if I mistake not, a therapeutic agent will be found of incalculable value, and perhaps superior to any in our Materia Medica. The fact that a patient can take half an ounce a day for six weeks with impunity and marked benefit, is sufficient to disprove the statement of Dr. Osborn, who fancies he has discovered toxical properties in this salt, against the use of which he therefore cautions the profession. I have used it in many cases as freely as those now reported, and taken myself, as an experiment, half an ounce at one dose, without being able to discover any such properties; and I think I can safely say that they exist only in the imagination of Dr. Osborn. Its safety recommends it especially to our consideration, for in the whole range of our Materia Medica we have no agent so potent for good, and yet so harmless; and none, I will add, of such power and diversified application, the *modus operandi* of which can be so perfectly comprehended. Our knowledge of the properties of most of our medicinal agents is the result of general experience of an empirical character. We might know in advance that an alkali would correct an acid in the stomach, but who could foretell that opium would produce narcotism—that ipecac would vomit—scammony purge, or quinia cure intermittents? And after a knowledge of these facts as the result of a long experience, who can even now explain accurately and philosophically the relation of cause and effect as observed in these and hundreds of other instances? But in the administration of oxygen as a therapeutic agent, we know precisely how the indications are to be fulfilled by this

treatment. We are giving that element of "the breath of life" upon a constant and due supply of which depends the healthy operation of every part of the body—the agent of disintegration and elimination—the prime motive power of the human machine, "the leaden weight or bent spring which keeps the clock in motion." By the light of modern science, we are now looking beyond the great mass of heretofore ultimate facts, to discover, if possible, the laws and principles which govern their operations. Every advance made in this direction is true progress in medical-science, by which it is pressing steadily onward in its career, with the unchanging laws of nature for its firm foundation.

Note.—With the foregoing views of the pathology of phthisis—by which its origin is referred to a deficiency of oxygen in the blood, whether resulting from breathing habitually an impure atmosphere, from insufficient bodily exercise, or physical incapacity to a full expansion of the chest—we cannot wonder at its almost universal prevalence and great fatality. Man was made to breathe at all times, by night as well as by day, *a pure atmosphere*, and to give due exercise to muscles which were made for active employment. But this demand of our physical organization is frustrated by a growing tendency to muscular inactivity, which the close confinement of many forms of business render almost unavoidable, and more especially by the breathing of air which is incapable of supporting life in a healthy condition, by reason of the bad ventilation of dwellings, places of business, and rooms for public assemblies. In treatment, the first indication is, of course, to avoid these evils as far as possible; and when more is required, the next will be to aid nature in her efforts to throw off the disease by supplying the blood with an additional allowance of oxygen by any method which may be found the most effectual. For this purpose the chlorate of potash is offered, not as a certain specific or panacea, but as a rational method of meeting the most important indication in the way of treatment which has been suggested by theoretical views, and to some extent practically confirmed by a limited experience.

The Physiology of the Circulation. A Course of Lectures delivered at the College of Physicians and Surgeons, New York, in the Fall Term of 1859. By JOHN C. DALTON, JR., M.D., Professor of Physiology and Microscopic Anatomy.

LECTURE IX.

(OCTOBER 4.)

Nature of Excretion and Secretion—New Substances formed in Secretion—Sugar in Liver—Experiment—Local Origin of Liver-Sugar—Formation of Sugar in Liver after Death—Experiment—Mode of Formation of Liver-Sugar—Glycogenic Matter—Its Conversion into Sugar—History of Discovery of Liver-Sugar—Different Opinions in regard to it—Objections to Glycogenic Function of Liver—Question of the Origin of Glycogenic Matter—Experiments—Investigations of Sanson—Of Poggiale—Of Pavy—Of Harley and Sharpey—Present State of the Question.

In the last lecture, gentlemen, we studied the phenomena of endosmosis and exosmosis, and the mode in which different substances pass through the animal frame by absorption and exudation. We found that these substances are taken up by the circulating fluids in different proportions, and with different degrees of rapidity; and, on the other hand, that the ingredients of the blood itself are exuded through the vessels, some in larger, and some in smaller quantity, while others still are retained within the circulation, and do not make their appearance in any of the secreted fluids.

Whenever a substance, therefore, exists in the blood, which is capable of passing through the animal tissues by exosmosis, it will be discharged with the various animal fluids. But as the same substance passes through different membranes with different degrees of facility, it will be discharged more rapidly by one organ, and less so by another. Thus, the different animal fluids, though all supplied originally from the blood, contain different proportions of watery, saline, and crystallizable substances.

Now this process, by which the ingredients of the blood pass out by the various glandular organs, is called the process of *Excretion.*

It takes place, as we have seen, whenever certain medicinal or poisonous substances are introduced into the blood. These substances at once pass out by exosmosis, and make their appearance in the different animal fluids, in varying proportions. Iodide of potassium, for example, appears immediately in the saliva, and soon afterward in the perspiration and the urine. Ferrocyanide of potassium, on the contrary, appears in the urine, but not in the saliva.

Bernard, in one of his experiments, injected into the jugular vein of a dog a solution containing, at the same time, seven and a half grains of ferrocyanide of potassium, seven and a half grains of iodide of potassium, and sixty grains of grape-sugar. Immediately afterward iodine was detected in the saliva, but neither the sugar nor the ferrocyanide could be found in this secretion at any time. On the other hand, all three substances passed into the urine, but at different periods, viz.: the ferrocyanide of potassium, in seven minutes; the grape-sugar in forty minutes; and the iodine only at the end of three hours.

The urea, also, which is produced in large quantity in the circulating blood, passes out rapidly and incessantly by the kidneys. This substance, therefore, is a natural ingredient of the urinary excretion, and does not usually appear in any of the other animal fluids. But if the action of the kidneys be suspended or impeded, so that the urea accumulates in the blood beyond its natural quantity, it may then be exuded from other parts of the circulatory apparatus, and appear in the perspiration, the saliva, and in serous effusions.

In all these cases, the constitution of the excreted fluid depends upon the varying endosmotic power of its different ingredients, and upon their varying affinity for the different glandular membranes.

But to-day, gentlemen, I wish to call your attention to another function connected with the circulation, still more peculiar and physiological in its nature. For all the animal fluids do not consist alone of the exuded ingredients of the blood. On the contrary, most of them contain, in addition, other substances peculiar to themselves, which do not come from the blood, but which are produced in the substance of the glandular organs. These peculiar substances, of new origin, are then mingled with the products of transudation, and thus form a compound animal fluid. This process, which we are now about to study, is known by the name of *Secretion.*

Excretion and secretion, therefore, are two essentially different phenomena. Excretion is a process of simple transudation, by which the ingredients of the blood pass out through the organic tissues in different proportions; while in secretion, new and peculiar substances make their appearance, and give a special character to the constitution of the secreted fluid.

In every secretion, accordingly, beside the watery and saline substances derived from the blood, there is a special and characteristic ingredient, which is formed by the glandular organ itself, and is found nowhere else. In the saliva, we find ptyaline; in the gastric juice, pepsine; in the bile, the resinous and crystallizable biliary substances

None of these matters pre-exist in the blood, but they all originate by a peculiar nutritive or secretory process in the tissue of the glandular membranes.

In all these instances the *materials* of the secretion are, of course, supplied by the blood. For the substance of the gland has no other source from which to derive its nourishment. It therefore absorbs from the blood watery, crystallizable, and albuminous matters, and appropriates them to the nutrition of its own tissues. But at the same time it compels some of these albuminous materials to undergo a process of transformation or metamorphosis, and converts them into substances of a different nature. It is in this way that new ingredients originate in the substance of an organ, as products of the secretory action of its glandular tissue.

Now, the products of secretion, thus formed in various parts of the body, are destined for various uses. Some of them are discharged upon the surface of the integument or into the alimentary canal; while others are taken up by the blood, and transported to distant parts of the circulatory system. Thus the constitution of the blood becomes altered in passing through such a glandular organ; for it not only loses the ingredients which transude into the glandular tissue, but it absorbs also the new substance which is produced in the texture of the organ.

At the same time a reverse alteration takes place in the blood, when this new substance is decomposed or discharged in other parts of the system.

This brings us, gentlemen, to a new, and very important element in the phenomena of the circulation, viz., the *alteration of the blood by the production and destruction of new substances in various parts of the circulatory system.*

Some of the most interesting of these phenomena are connected with the formation of sugar in the liver—a function which has of late years very much occupied the attention of experimental physiologists. This formation can be shown in a very simple manner. I have here a dog that has been kept under my own observation for several days. The dog is naturally a carnivorous animal, but in this instance pains have been taken to confine him strictly to a meat diet; and for at least a week he has had no food containing sugar, or any starchy substance capable of being converted into sugar. An hour or two ago he was fed with a moderate meal of fresh uncooked meat.

I will now kill the animal suddenly, by section of the medulla oblongata, and immediately proceed to place a ligature on the portal vein,

in order to confine the blood in this part of the circulatory system. The ligature is applied by the aid of an aneurism needle of peculiar construction, which you see here, introduced through a small opening in the abdominal walls. If the abdominal walls were first opened by a wide section, the natural support of the internal organs would be taken away, and the blood in the liver would be liable to regurgitate into the portal system. But it is our object to collect the blood from the portal vein, before it has passed into the hepatic capillaries.

The ligature is now applied, and the abdominal walls are widely opened, and the internal organs exposed. You observe the dark, purple color of the intestinal canal, owing to the obstruction and engorgement of the portal system of vessels by the ligature.

I will now proceed to collect a little of the portal blood by puncturing the vein behind the ligature, and catching the blood, as it escapes, in a porcelain capsule. It is immediately mixed with an excess of sulphate of soda, and a little water, and coagulated by boiling over a spirit-lamp. The fluid will afterward be filtered, so as to make a clear, colorless solution.

A portion of the liver is then taken, ground in a mortar, mixed with water and sulphate of soda, and the fluid mixture coagulated and filtered as before. Portions of the kidney, of the spleen, and of the muscular tissue are also taken, and treated in the same way.

All the fluids are now completely filtered, and we have therefore watery extracts of various tissue and organs, of the portal blood, and also of the tissue of the liver. I will examine them all in succession for the presence of sugar, by the application of Trommer's test.

In the extracts of the spleen, the kidney, and the muscles, no reduction of copper takes place, on using the test, and there is no reaction indicating the presence of sugar. The extract of the portal blood is equally without effect, and does not produce any decolorization in the solution of sulphate of copper. But on applying the same test to the extract of the liver there is at once, you observe, an abundant reduction of copper, and the solution is completely decolorized.

It is evident, therefore, that the tissue of the liver contained sugar, while none of this substance was to be found in the other organs, and none even in the portal blood by which the liver is supplied.

Now, this experiment might be repeated upon any other species of animal with the same result. In the horse, the ox, the goat, the sheep, the cat, the rabbit, the monkey, and in various kinds of birds, reptiles and fish, the liver has always been found to be highly saccharine in its ingredients, though no sugar were contained in other parts

of the body. In the human subject, also, the same condition exists. If the liver be examined in a man suddenly killed while in a state of health, or dead after a very short illness, it is found abundantly saccharine by the ordinary tests for such substances.

It is one of the most certain facts, therefore, that the liver is distinguished from most other organs by being constantly charged with sugar in a state of health.

The next important question to determine in regard to this subject is that of the origin of the sugar thus found in the liver. Is it introduced into the body from without, is it produced in some other part of the system, and deposited in the hepatic tissue, or is it actually formed in the substance of the liver itself?

It is almost evident, from what we have already seen, that it is neither introduced with the food, nor formed in other parts of the system to be deposited in the liver. For the liver contains sugar, in carnivorous, as well as in herbivorous animals; and the researches of Bernard have shown that the proportional quantity of sugar is as great in the carnivora as in vegetable feeders. At least there is no greater difference, in this respect, between the carnivora and the herbivora than between the different species of vegetable-feeding animals themselves.

For example, in the goat the per centage of sugar in the liver was found to be 3.89; in the ox 2.30, and in the sheep only 2.00. It was 1.69 in the dog, and only 1.68 in man, living on a mixed diet; while in the carnivorous cat and the vegetable-feeding rabbit it was precisely the same, viz., 1.94.

In this very animal, too, upon which I have just experimented, the sugar in the liver is abundant, and yet he has certainly had no sugar or starch with his food, for at least a week.

Beside, there is no sugar in the blood of the portal vein, nor in any of the other organs which we have examined.

We conclude, therefore, that the sugar found in the liver was produced in the organ itself, and did not come from any other source.

But there is another very remarkable fact in this connection, which was also first noticed by M. Bernard, which shows still more conclusively the local origin of the sugar found in the liver. It is that the liver, after being taken out of the body, and separated from all its connections, will continue to produce sugar for a certain length of time after death.

Here is a liver, for example, which I took this morning from the body of a recently killed dog. Immediately after its removal, I in-

serted the nozzle of an injecting-pipe into the portal vein, the other end of the pipe being connected, by a flexible tube, with the stop-cock of a hydrant. The liver was then injected with water from the hydrant, under a moderate force, the water penetrating through all its capillaries, and being discharged by the hepatic vein. At first the fluid discharged by the hepatic vein was colored with blood, and highly charged with sugar; but it soon became lighter in tinge and less abundantly charged with solid ingredients, and after a short time it passed from the vessels of the organ entirely colorless.

You now see the organ perfectly pallid and œdematous, from the watery injection. All the more soluble ingredients of the liver, including the sugar, have been washed away by the injected fluid, as we can very easily ascertain by experiment.

I cut off a portion of the liver, and after bruising it in a mortar, with water, coagulate the mixture as before, and filter. The filtered fluid, which is quite colorless, produces, as you see, no reduction whatever of the oxide of copper in Trommer's test.

This liver, therefore, contains no sugar. I will now leave it for twenty-four hours under cover, and at the next lecture will examine it again. In all probability, at that time, it will again give evidence of a saccharine ingredient.

Here, then, gentlemen, we have the essential characters of the function of *secretion.* The tissue of the liver, by virtue of its own properties, has the power of producing a new material, which did not exist beforehand in the blood, but which is formed entire in the substance of the organ itself. No sugar is to be found, in carnivorous animals, in the blood of the portal vein; but it nevertheless makes its appearance in the tissue of the liver, is absorbed thence by the blood circulating through the hepatic vessels, and is carried away by the hepatic vein. Thus we find that the blood is changed in constitution while passing through the organ. The blood of the portal vein, below the liver, contains no sugar; that of the hepatic vein, above the liver, is abundantly saccharine. This is not because the ingredients of the blood are directly transformed while passing through the hepatic circulation, but because the blood absorbs a new substance from the tissue of the organ, and thus acquires new properties while passing through its vessels. The sugar is supplied by the substance of the liver, and is absorbed from it by the circulating blood.

We have found, then, so far, that the sugar in the hepatic blood comes originally from the liver itself. Now let us see what is the

mode of its formation in the hepatic tissue, and what are the materials from which it is produced.

One of the most curious and interesting particulars in relation to this subject, which we again owe to M. Bernard, is the fact that, even in the liver, the sugar does not originate directly from the albuminous matters of the organ, but is produced from another substance, of anterior formation.

This substance, from which the sugar of the liver is produced, has a great deal of resemblance to the starchy bodies, and is called *glycogenic matter*. It may be extracted from the hepatic tissue by a very simple process. The liver is taken from the body of the animal, immediately after death, cut into small pieces, and then thrown at once into boiling water, where it is allowed to remain for five or six minutes. This is in order to coagulate the albuminous substances of the liver, and prevent their exciting a sort of fermentation which would destroy the substance sought for. The coagulated pieces of liver are then taken out, and pounded in a mortar with a little cold water, until the whole substance of the organ is reduced to a semi-fluid pulp or magma. This is to be diluted with distilled water, gradually heated to the point of ebullition, and boiled steadily for an hour. It is then pressed and filtered. The filtered fluid comes through with a slightly yellowish color and an opaline tinge.

This fluid contains the glycogenic matter, extracted by boiling water from the tissue of the liver. It may be precipitated by the addition of alcohol in excess, or of glacial acetic acid, as it is insoluble in both these substances. After precipitation, it may be purified by washing with alcohol, and by treatment with animal charcoal, and afterward dried and preserved. Here is a specimen of glycogenic matter which has been extracted in this way. You see that it is a nearly colorless, dry, powdery mass, very much like some kinds of starch or dextrine. It is soluble in water, making an opaline liquid, and may be again precipitated by alcohol, or strong acetic acid. It contains no nitrogen, and consists of carbon, hydrogen and oxygen, in the following proportions, viz.:

$$C^{12}\ H^{12}\ O^{12}.$$

Its constitution resembles so much that of the starchy matters, that it has been sometimes known by the name of *animal starch*, or *animal dextrine*.

But the most important property of this substance is, that it may be instantly converted into sugar by the action of a ferment. The glycogenic matter, alone, does not reduce the oxide of copper in Trom-

mer's test, nor answer to any other of the tests for sugar. But if it be dissolved in water and placed in contact with any albuminous ferment, such as the animal matter of the saliva, or of the intestinal juices, it is at once converted into sugar, and will reduce the oxide of copper without difficulty. The blood itself contains a ferment which is capable of producing the same change, at the temperature of 100° F., and a similar one is also to be found in the tissue of the liver.

There are two stages, therefore, in the secretion of sugar by the liver. The first consists in the production of glycogenic matter by the hepatic tissue. In the second place, this glycogenic matter is soon afterward converted into sugar, by a process of catalysis, under the influence of an animal ferment, also contained in the liver. Lastly, this sugar is absorbed by the circulating fluids, and carried away by the blood of the hepatic vein.

Now, since the first discovery of this fact by M. Bernard, in 1848, the ideas and opinions of the profession in regard to it have passed through the most curious changes. It will be interesting to trace the history of these changes for the last ten or twelve years, and to see how they have led to our present convictions.

The most doubtful point, in relation to the whole matter, was, of course, that of the *internal or external origin* of the sugar found in the liver and the blood of the hepatic vein. Bernard showed beyond a doubt that the substance which he discovered there was really sugar. For he not only distinguished it by the most ordinary tests, such as that of carbonizing by the action of sulphuric acid, turning brown by boiling with potassa, and reducing the oxide of copper in Trommer's test; but he placed its identity beyond question, by subjecting it also to the absolute and unvarying test of fermentation. The extract of the liver, mixed with a little yeast, and kept at a temperature of from 70° to 100° F., fermented readily. The gas, which escaped in bubbles, was collected, and found to be carbonic acid; and the remaining fluid was concentrated by distillation, and the distilled portion found to contain alcohol. It was certain, therefore, that this new ingredient of the hepatic tissue belonged to the group of saccharine substances.

Bernard also showed very strong evidence in favor of the internal origin of this sugar. He ascertained the percentage of sugar, for example, existing in the liver of animals fed on different kinds of food, and found that the quantity of sugar was as great in dogs fed upon meat alone, as in those fed upon meat and bread, or even upon starch and sugar. He kept two dogs, also, during a very long time, exclu-

sively upon an animal diet, in order to see whether the liver would still contain sugar. One of these animals was kept for three months upon cooked meat, (boiled sheep's heads,) the other for eight months upon scalded tripe. At the end of that time they were killed, and the liver in each instance contained an abundance of sugar.

But it was thought that the sugar in these cases might have been introduced with the food before the commencement of the experiment, and might have remained condensed in the tissue of the liver during the whole time of its continuance. Bernard, however, showed that this was not probable, by the following instance:

Nine rats were caught in the sewers of Paris. Three of them were at once killed, and their livers found to be highly saccharine. The rest were then kept entirely without food for four days. At the end of that time three of them were killed, and their livers, upon examination, were found to be nearly destitute of sugar, only slight traces of this substance being discovered, too minute for its quantity to be estimated. The sugar which existed in the livers of these animals, therefore, at the time of their capture, had disappeared during their four days' starvation. The remaining three rats were then supplied with an abundant meal of raw beef, and when killed, six hours afterward, their livers found to contain an abundance of sugar.

It was concluded from this that the sugar of the liver was not derived from any saccharine ingredient of the food, but was formed in the body itself, and was of strictly internal origin.

But two very curious objections were soon after made to Bernard's experiments and conclusions, both of which appeared about the same time, in February, 1855. One of them was made by M. Figuier, the other by M. Longet. M. Figuier maintained that the herbivorous animals received sugar and starchy substances with their food; that the sugar so introduced was taken into the blood, and circulated throughout the vascular system; that, in point of fact, traces of sugar could be readily detected in the blood of such animals; that the carnivora, in eating the flesh of the herbivora, received sugar with their food, since the muscular tissue of the herbivora contained blood, and their blood contained sugar. So that, according to M. Figuier, an animal kept for three or eight months on the flesh of sheep or cattle was receiving all that time, with the food, the very substance which was afterward found in his liver; and such an experiment was no proof that the sugar of the liver was formed internally.

Bernard, however, showed conclusively that this objection was not valid. For though the blood of the herbivora does readily contain

traces of sugar, and though the muscular flesh, taken warm and dripping from the body of the animal, also contains a small quantity, this is not the case with meat which has been kept for a short time, for the sugar in the blood of the muscles at the moment of death is very soon decomposed, and is not reproduced. Meat prepared for the market does not, therefore, contain sugar; still less, meat which has been cooked by boiling, or in any way drained of blood; and particularly, the kind of meat with which his animals had been fed, did not, in point of fact, contain any trace of sugar, and yet this substance was abundant in their livers at the end of several months.

M. Longet, on the other hand, announced that sugar might exist in the blood of the portal vein, and yet not be discoverable by Trommer's test, owing to the presence of *albuminose*, which interferes with the reduction of the oxide of copper. That being the case, he maintained that the sugar found in the liver was supplied to that organ by the portal vein; and that the only reason why it had not been discovered in the portal blood was, that its reaction was interfered with by the presence of albuminose.

But this objection of M. Longet was no better founded than the other; for a very simple examination will show that the liver may be charged with sugar, and the portal blood destitute of it, when the portal blood contains no ingredient capable of interfering with Trommer's test. For if a little grape-sugar be added to the portal blood, which does not, by itself, cause any reduction of the oxide of copper, the extract of the same blood will afterward give an abundant precipitate by Trommer's test.

Beside, Bernard never trusted exclusively, in his decisive experiments, to Trommer's test, but employed the test by fermentation, as well. The extract of the liver will ferment rapidly, when no fermentation can be excited in the extract of the portal blood.

Other experimenters also published results confirmatory of Bernard's discovery. Lehmann communicated to the French Academy a list of experiments of his own, on dogs, either entirely deprived of food or fed exclusively with meat, in which the blood of the portal vein was destitute of sugar, while that of the hepatic veins contained it in perceptible quantity. M. Leconte and M. Poggiale came separately to the same conclusion; and M. Moleschott was led to the belief, by his own experiments, that the sugar of the liver originated in the organ itself, and did not come from without. All these investigations were published in March and April, 1855.

M. Figuier, however, made a second communication to the Acade-

my, in which he still maintained that the sugar of the liver was brought to it by the blood of the portal vein, and was derived originally from the products of digestion in the intestine.

These experiments and conclusions of M. Figuier were referred to a special committee of the Academy, consisting of M. Dumas, M. Pelouze, and M. Rayer. This committee, after having examined the subject with care, made a report at the session of June 18th, 1855, in which they did not confirm M. Figuier's experiments, but, on the contrary, found that no sugar was to be discovered in the portal blood of a dog fed on raw meat, while it was easily detected in the blood of the hepatic vein. They accordingly arrived at the conclusion that "all the facts announced by M. Bernard had been verified by the committee," and that, up to that time, "the doctrine of the glycogenic function of the liver appeared unshaken."

So far, then, it seemed very certain that the liver is the real source of sugar in the animal economy, since this substance is an invariable constituent of the hepatic tissue, and does not exist in the blood with which it is supplied.

During all this time, the greatest interest was excited among physiologists everywhere, in regard to the subject. Many others, beside those whom I have mentioned, took part in the discussion, some sustaining the views of M. Bernard, others in opposition. But the general verdict was in favor of his conclusions.

In 1857, however, a new face was put upon the matter by the discovery of the glycogenic matter, by M. Bernard himself.

This discovery at once made it necessary to go over again the entire question of the internal or external origin of sugar; for the glycogenic matter of the liver resembled so much the starchy bodies, that it seemed not at all impossible that it might have a vegetable origin. As it was disputed beforehand, therefore, whether the *sugar* of the liver had been introduced with the food of herbivorous animals, so it was now a question whether the *glycogenic matter*, the direct source of the liver-sugar, might not have found its way into the animal organism in a similar way.

M. Bernard maintained that the glycogenic matter was an animal substance; that it was formed in the liver; and that it could not be found in other organs, nor in the blood of the portal vein.

But there were others who thought differently.

M. Sanson published a memoir in Dr. Brown-Séquard's *Journal de Physiologie*, for April, 1858, in which he maintained that the glycogenic matter was a normal constituent of many other parts of the body

beside the liver. M. Sanson was a professor in the Veterinary School of Toulouse, and most of his experiments were made on horses and cows. He examined the spleen, the kidneys, the lungs, the muscular flesh, the blood of the jugular vein and of the portal vein, and arterial blood, by the ordinary process, and found that they all contained glycogenic matter in perceptible quantities. The same substance was detected in the portal blood, and even in the blood of the jugular vein of a dog, fed for some days exclusively on cooked meat. He concluded that the glycogenic matter, therefore, was nothing else than vegetable dextrine, taken with the food of the herbivorous animals, and that the same substance existed in the flesh which forms the diet of the carnivora.

This memoir of M. Sanson was referred to a committee of the French Academy, consisting of MM. Bouley, Poggiale and Longet. These gentlemen went over the whole ground very carefully, and repeated all the experiments together with M. Sanson. They reported, however, against his conclusions. Their decision was,

1st. That in dogs fed exclusively upon meat the glycogenic matter is to be found only in the liver; and that this substance, therefore, in all probability, is formed in the hepatic tissue.

2d. That glycogenic matter is very abundant in the liver of herbivorous animals. It is not to be found in the other organs, unless these animals have been fed upon a diet rich in starchy materials.

3d. In a large number of experiments, glycogenic matter was found in butchers' meat only once. In other experiments, it was found constantly in the flesh of horses; but this fact was not regarded as proof that glycogenic matter was in all cases derived from the food.

This report was published in the *Journal de Physiologie*, for July, 1858.

I have also been led to the same conclusions by my own experiments upon carnivorous animals. In order to ascertain whether any substance existed in the portal blood, capable of being converted into sugar, it was examined as follows:

Experiment, *September* 30*th*, 1858.—A healthy dog, of medium size, was kept for three days exclusively upon the fresh uncooked meat of the bullock's heart. He was then killed, by section of the medulla, three and a half hours after feeding. One fluid ounce of the portal blood was then immediately collected, by the ordinary method, and defibrinated by stirring. One-half was at once coagulated by boiling with water and an excess of sulphate of soda, and the filtered extract subjected to Trommer's test for sugar. No sugar was present. The

remaining half was kept, for two days, exposed in a glass vessel, at a mild temperature. At the end of that time, it was examined for sugar, by Trommer's test, in the same way as above, but no indications of the presence of sugar were manifested.

The liver of this dog was used for the extraction of glycogenic matter. It was cut into small pieces, and coagulated by boiling water—then reduced to a pulp by pounding in a mortar, boiled with a small quantity of water, pressed, and filtered. An abundance of glycogenic matter was precipitated from the filtered fluid, by the addition of alcohol in excess. It was yellowish in color, and dissolved readily in pure water, giving to the solution a strong opaline tinge. The watery solution gave no blue color on the addition of iodine, but only a clear, deep, maroon-red.

The solution of glycogenic matter showed no traces of sugar when subjected to Trommer's test; but on being mixed with saliva, and placed in a jar of water, at the temperature of 100° F., at the end of four minutes it was found to contain an abundance of sugar, and reduced the oxide of copper with great readiness.

The saliva used in this instance was very active, and, in a counter experiment, converted boiled starch into sugar in less than a minute.

In order to ascertain whether any glycogenic matter existed in the meat upon which these dogs were fed, the following experiment was performed:

Experiment, Oct. 6th, 1858.—One pound of the fresh lean meat of the bullock's heart was taken, cut into fine pieces, coagulated by boiling water, then drained and washed, and afterward boiled for one hour in a small quantity of distilled water, just sufficient to bathe its substance. It was then drained, pressed in a linen bag by a porcelain press, and the fluid of decoction filtered through paper. The filtered fluid was nearly two ounces in quantity, of a light yellowish color, nearly clear, and with hardly anything of the deep, opalescent appearance which is presented by a decoction of the liver under similar circumstances. The fluid was acid in reaction, with a specific gravity of 1008. It did not show any signs of sugar by Trommer's test.

Treated with five times its volume of alcohol, at 95 per cent., it let fall a copious white precipitate, which did not contain any glycogenic matter, as shown by the following trials.

The precipitate was separated by filtration, well washed with pure alcohol, and dried over the water-bath. Redissolved in distilled water, it did not give any bluish or red color, on the addition of iodine. Mixed with an equal quantity of saliva, and kept at 100° F.

for twenty minutes, it did not give any indications of sugar by Trommer's test.

Another portion of the same saliva, mixed with boiled starch, caused the appearance of sugar in less than two minutes.

I have also found that, in dogs fed upon meat which contains no glycogenic matter, this substance may be detected in the liver, but not in other organs.

Experiment, Oct. 12th, 1858.—A healthy dog was fed for eight days exclusively upon the fresh meat of the bullock's heart, and then killed by section of the medulla oblongata.

The liver, spleen, kidneys, and one lung were taken out and cut up into small pieces. A portion of each organ was then examined in the ordinary way, by Trommer's test for sugar. The liver alone contained this substance, the other organs showing no trace of it.

The remainder of the organs were then separately coagulated by being placed in boiling water, then drained, reduced as nearly as possible to a pulpy condition, by bruising in a mortar, and the pulp boiled for an hour in a small quantity of distilled water. The decoction was then filtered, and precipitated by alcohol, and the precipitate dissolved in water. In neither case did this watery solution show any trace of sugar by Trommer's test. The remainder of the solutions were then placed in contact with saliva at 100° F. At the end of ten minutes the extract of the liver showed abundance of sugar, while that from the other organs gave no reaction whatever with Trommer's test.

It is plain, therefore, that the substance from which the sugar is produced, as well as the sugar itself, is formed in the liver, and is not derived from any other source.

But the most singular opinion yet advanced in regard to this subject, was brought forward in the latter part of 1858, by Dr. Pavy, of London, in a communication to the fourth volume of Guy's Hospital Reports. Dr. Pavy confirmed the observations of others so far as to establish, that the glycogenic matter was confined to the liver, and did not exist in other regions. But he was led to believe that this glycogenic matter was never converted into sugar during life, but only after death, by an altogether accidental and unnatural transformation. He maintained, therefore, that during life it was only the glycogenic matter, not sugar, that was produced in the liver, and regarded the production of sugar as a purely post-mortem occurrence. He arrested the conversion of glycogenic matter into sugar, in some instances, by injecting the liver of the animal before death with a solution of potassa, and, in other cases, by plunging the liver immedi-

ately into a freezing mixture. Under these circumstances, he found no sugar, either in the blood of the hepatic vein or in the tissue of the liver, but only glycogenic matter.

The post-mortem production of sugar, however, according to Dr. Pavy, must take place with the greatest celerity, since, as every one knows, a minute or two is all the time required to take out the liver from an animal instantaneously killed; and yet the liver and the hepatic blood, under these circumstances, always contain an abundance of sugar.

These views have not been generally adopted or corroborated.* Dr. Geo. Harley and Prof. Sharpey, of London, performed a number of experiments, which were reported to the Royal Society, in February, 1860. Their results led the experimenters to the following conclusions:

1. Sugar is a normal constituent of the blood of the general circulation.

2. The portal blood of an animal fed on a *mixed* diet contains sugar.

3. The portal blood of a *fasting* animal, as well as of an animal fed solely on *flesh*, is devoid of sugar.

4. The livers of healthy dogs contain sugar, whether their diet be animal or vegetable.

5. Under favorable circumstances, and with proper precautions, saccharine matter may be found in the liver of an animal (a dog) after three entire days' rigid fasting.

6. The sugar found in the bodies of animals fed on *mixed* diet is partly derived directly from the food, partly formed in the liver.

7. The livers of animals restricted to flesh diet possess the power of forming glycogene, which glycogene is, at least in part, transformed into sugar in the liver.

8. As sugar is found in the liver at the moment of death, (even when the plan of freezing it has been strictly attended to,) its presence cannot properly be ascribed to a post-mortem change, but is to be regarded as the result of a natural condition.

These, gentlemen, are the phases through which the history of this remarkable discovery has passed thus far. At the next lecture, we shall study the mode in which the sugar disappears in the circulation, and the other similar changes which affect the constitution of the blood.

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* I introduce a notice of Dr. Harley's experiments here, in order to bring the account of the subject up to the present time. J. C. D.

Report of a Trial for Criminal Abortion. By C. P. FROST, A.M., M.D., of St. Johnsbury, Vt.

An individual, a native of Ireland, styling himself Dr. W. H. M. Howard, and professing to be an English surgeon of great renown, was arraigned at the January Term (1859) of the Orange County (Vt.) Court, upon an indictment charging him with producing criminal abortion on Miss Olive Ashe, and also with causing her death thereby.

From the evidence adduced on trial, (the minutes of which have been kindly furnished me by the presiding Judge, Hon. James Barrett,) it appeared that Miss Ashe went to the establishment of Howard, at Bradford, Vt., about the middle of January, 1858, for the purpose of having abortion procured, supposing herself pregnant by a young farmer, by whom she had been employed as a servant during the previous summer; that a bargain was struck between the reputed father of the child and Howard, by which he was to perform the desired service for the sum of $100.

Her twin-sister, who was with her during the whole of her stay at Howard's, testified that the doctor operated three times with instruments. These instruments she could not describe minutely, nor could she tell the number used. As the result of the first operation, in which he introduced one or more instruments into the body of her sister, there was a discharge of water, which she said lasted two or three hours or more. On the next forenoon he operated again; used two or three instruments; sister made no great outcry, but complained, and gave other evidences of considerable pain. This operation was followed by a discharge of quite a quantity of blood. At night of the same day he operated a third time. Sister did not sit up after the second operation. He used instruments at this time, and also introduced his hand. The result of this operation was the delivery of the child, which was about two-thirds grown. Flowing continued a few days. This last operation was Saturday night, and sister lived till the next Friday evening, January 29th. The last two or three days of her illness were attended with delirium, picking the clothes, &c.

The medical witness first called was C. P. Frost, M.D., of St. Johnsbury, Vt. He testified that he had been in practice two years; that at the request of Government he made a post-mortem examination of a body said to be that of Olive Ashe, on the 4th of February, 1858, six days after death; found the body plump; well nourished in its general condition; under the eyes was a dark-yellowish areola; mammary glands were well developed, and milk could be obtained from

both breasts; dark areola about the nipples; abdomen distended; between the thighs was found a quantity of cotton soaked with a purulent discharge from the vagina; vulva enlarged and swollen; vagina dilated, so that the hand could be passed into it without much difficulty; mucous membrane of vagina of dark-blue color, and covered with pus. On making incision from sternum to the pubes, found the subcutaneous adipose tissue ½ inch thick; the peritoneum was in its normal condition, except that the vessels between the uterus and bladder were increased in size and number; the uterus was 5½ inches in length, 4½ wide, and 1½ thick, and weighed one pound; os uteri 1½ inch in diameter; cervix uteri in a state of slough; the mucous membrane and muscular tissue being nearly destroyed; one deep slough on the anterior surface was not entirely detached; the body of the womb was in a healthy condition; placental mark well defined upon the right anterior and lateral portion of the fundus, and covered an area of six or eight square inches, and presented large open-mouthed sinuses; other organs of the abdomen perfectly normal; also those of the thorax; head not examined. The direct cause of death, in the opinion of the witness, was inflammation and sloughing of the cervix uteri, perhaps accompanied by hæmorrhage. The inflammation and sloughing were caused by violence in the use of instruments applied to the neck of the womb in the attempts to induce abortion. Believed that instrumental violence was used, because of the depth of the slough at certain points, extending to the entire destruction of mucous membrane and muscular tissue. The inflammation and sloughing had obliterated or changed the direct evidence of violence. From the appearance of the womb, he judged the wounds were made at least three days prior to death, and probably a week or more.

On cross-examination, witness gave as the reason for the opinion that the mark called placental was really such, the increased vascularity of the uterus, and the number and size of the sinuses. He gave a description of polypus, also of the hydatid, and asserted that their attachment to the uterus differs unmistakably from that of the placenta. He knew too little of the corpus luteum to be able to distinguish in this case whether it was that of menstruation or pregnancy. He was fully satisfied in his own mind that something the result of impregnation had been expelled from this womb a short time previous to death. The increased vascularity of that organ could be accounted for upon no other supposition than that of pregnancy.

Selim Newell, M.D., of St. Johnsbury, Vt., was next called, and testified that he had been in practice thirty years; that he saw the

uterus, said to be that of Olive Ashe, on the day after the autopsy, and gave it a thorough examination. On the right anterior portion of the fundus was a well-defined mark, differing in color from the remainder of the lining of the uterus. It had a rough surface. Some portions were easily detached, and others were more adherent. There were well-developed sinuses with open mouths, and the uterine wall was thickest on the side on which this mark was found. To his mind, it indicated the point of placental attachment; could account for the appearances there found in no other way. His belief is that there are no marks of real placental attachment in case of the so-called moles.

The uniform practice of physicians in cases where it is deemed necessary to procure abortion, is to call in counsel, that they may be shielded against the charge of criminal abortion. Mechanical means are proper to be used in procuring abortion. No medicine or drug is regarded as a sure abortive.

He believed the appearances of injury about the cervix uteri in this case were due to mechanical violence. He knew of no other satisfactory way of accounting for those appearances. The wounds inflicted would cause hæmorrhage; uncertain to what extent—possibly sufficient to produce death.

On the cross-examination, he stated, after a lengthy description of the various morbid growths found in the uterus, that none of them have a placental attachment, though after the removal of some of these appearances, somewhat similar to those found after removal of a placenta, might be met with. These growths would cause enlargement of the abdomen and breasts, and might produce the areola about the nipples. They may produce any one of the symptoms of pregnancy, but he would hardly think *all* in the same case.

Ulceration of the cervix uteri in ordinary disease of the womb is not deep. Cancerous disease would produce deep ulcers. Parturition may cause laceration of the cervix, which, if attended by cold, &c., may result in death. It might possibly result in the formation of a cavity as a consequence of sloughing. Inflammation from mechanical injury to the cervix might occur in thirty-six hours. Health of patient and mental condition might modify it somewhat. He thought the marks existing on this womb were caused by inflammation, and might be produced in from seven to ten days after the injury was inflicted.

The first medical witness called by the defence was E. E. Phelps, M.D., of Windsor, Vt., who testified that he had been in the practice of medicine since 1824, and had been Professor of Theory and Practice and Pathological Anatomy since 1840. He described the mor-

bid growths found in the uterus under three heads: 1. Fibrous growths. 2. Polypi. 3. Cysts.

The expulsion of these foreign bodies from the womb may produce laceration of its neck and mouth. Disease of the os and cervix uteri occurs as the result of inflammation, and is found most frequently on the exterior. Ulcers of various forms are found. Whitehead mentions one oblong and quite deep. *Theoretically*, the rounded may be quite deep, and not *necessarily* the result of mechanical violence. Ulceration, either external or internal, may be a cause of abortion. He had examined the womb produced here by Dr. Frost; had examined the ovaries. Said he was not sufficiently conversant with the corpus luteum after the preparation had been kept in alcohol to derive any aid from it in determining whether pregnancy had existed or not.

From the appearance of the womb, and the description given by Drs. F. and N., he did not think a case of pregnancy has been made out. His reason was, that any evidence furnished by the uterus itself in its present condition was worth but little to him in regard to that, because the preparation had been kept so long in alcohol—a year. Had heard the description given by Drs. N. and F. of the placental mark, and had examined those marks. The evidence of the placental mark should be pretty clear. That evidence to him, through them, is secondary—a secondary matter. All the appearances on the womb, and those described by Drs. N. and F., may be accounted for on some other supposition than that of pregnancy. A fibrous growth may have been removed spontaneously or by mechanical means. It is possible that the marks on the neck of the womb, described by Dr. F., may have arisen from some other cause than mechanical violence. The idea was not perfect in his mind as to what they were before the uterus was put in alcohol. Had it been a more recent preparation, he could have judged better. It is *possible* they may be the result of disease. It would be very difficult to distinguish with certainty between sloughing from ulceration and from injury by mechanical means. A debilitated state of the system would tend to produce ulcers. Whether it would increase their depth he was uncertain; it might tend to do so.

Depressing passions and emotions are causes of miscarriage. If it occurs from any of these causes, the life or death of the fœtus would depend on the duration of the cause. If the depressing emotion existed for a long time, the fœtus would be more likely to be dead than if the cause of miscarriage acted suddenly. If the cause existed for several months, *theoretically* he would think the chances between a dead and living fœtus nearly equal. From what he had heard testified by

the sister, relative to what occurred at Dr. Howard's as to operations, pain, symptoms and appearances, he had no evidence tending to convince him that a living child had been born, excluding her testimony that she saw one. He was not satisfied that a *living* child was born, if a child was born. He saw nothing in her evidence that convinced him that there was a living child in utero at any time. If a child was in utero, he saw no evidence that it was living at the time Howard performed his first operation.

The water described as passing out on the first operation may be accounted for by supposing the existence of a hydatid, which was ruptured by the introduction of an instrument. The bleeding at the second operation may be accounted for in many ways. It might result from labor. If there was a fœtus in the womb, and labor was progressing, there would be more or less flowing before delivery. From such flowing it does not follow that mechanical violence had been used. If disease existed about the cervix uteri, expulsion of a putrid fœtus, passing over the ulcers, would be likely to make them worse than before, and might result in slough. Delivery of a dead fœtus would be less likely to irritate the neck of the womb than a living one.

On the cross-examination, Dr. Phelps said that if called in two or three days after the death of a woman, an examination would at times enable him to determine *conclusively* whether she had been delivered of a child eight or ten days previously; at times he could not so determine. If we were to find portions of the placenta attached to the uterus, or a portion of the cord within it, there would be no manner of doubt that there had been a child. Or in another case we might find a large red mark on the walls of the uterus, corresponding in size and form to the attachment of the placenta, and the uterine cavity filled with blood; we could then determine conclusively that delivery of a child had taken place a few moments before death. It would be possible to decide with certainty, by post-mortem examination, of a woman ten or twelve days after delivery, whether she died in consequence of parturition.

In the uterus presented in this case he saw no evidence of hydatids showing that they certainly were present. Nothing had been given in court that satisfied him as to the cause of death. He could not say, from the evidence, that she did not die in consequence of being delivered of a child. From an examination of the womb, he did not see evidence that there had been a polypus or a fibrous tumor. In case of post-mortem examination, eight or ten days after delivery, he

would, as a medical man, come to a conclusion whether a child had been born or not; but if his brethren—six or eight—should all engage in it, he would certainly expect all would not agree. He would not expect the evidence to be so conclusive that half a dozen, or even four men, would agree. This would not be the fact in the majority of cases, for they would be clear. In an autopsy, undertaken for the purpose of determining whether delivery of a child had taken place, it is highly probable that we should meet with appearances which would not lead several medical men to the same conclusion. For example, in a case where we are thrown entirely on the character of the placental mark, we should have to rely on characteristics with which we are not familiar. We have read about them, and our imagination may have misled us. The value of our opinion would depend on our familiarity and experience with these things. As a general law on post-mortem examinations, after delivery, there would be evidence of increased vascularity of the uterus, thickening of its walls, and some unnatural appearances about its os, and some placental marks in some degree of perfection. With these conditions, and without finding fragments of morbid growth, he would have no doubt that it was a case of pregnancy. Beneath the placental attachment we should find the vascularity very great. From the vascular condition of the wall of the uterus, at the point of attachment, he did not think he could decide whether a placenta or a hydatid had been attached. Did not think he could distinguish between the two from vascularity alone. The quantity of blood-vessels necessary to supply blood to the fœtus would be much larger than would be required for the hydatid.

He saw no conclusive evidence of ulceration about the uterus exhibited in this case. He could not say whether sloughing from bruise or injury would leave such a cavity as is shown in this case, the preparation has been kept so long in alcohol.

In the case described by Drs. N. and F., and the uterus, as here presented, without having seen its contents, it was impossible for him to tell what it contained. All the signs of pregnancy derivable from a post-mortem examination of the body, except a perfect placental mark, may exist from other causes.

S. J. Allen, M.D., of W. R. Junction, Vt., was also examined; his testimony did not differ materially from that of Dr. Phelps.

After a trial, lasting nine days, the jury brought in a verdict of guilty on the charge of abortion, and not guilty on that of manslaughter. After a hearing before the Supreme Court, on exceptions to the ruling of the Judge, Howard was sentenced to two years' imprison-

ment in the State Prison, where he is now serving out his sentence. An indictment for criminal abortion and manslaughter in the case of a young woman, who died two days previously to Miss Ashe, was also found against him.

A Case of Gun-Shot Wound; Bullet found in the Wall of Right Ventricle of the Heart Eighteen Years after the Accident. By G. B. Balch, M.D.

A short history of the case is as follows: In June, 1842, an Irish boy, by the name of John Kelly, received an accidental shot in his right shoulder; the ball passed through three inch-boards before it struck him. A surgeon was called, who probed the wound, and found the ball lodged nearly under the inner third of the clavicle. The ball entered the shoulder through the upper border of the trapezius muscle, about an inch and a half or two inches from the acromion process. There was not much hæmorrhage at the time, and the surgeon did not deem it prudent to remove the bullet, and in about six weeks the boy was able to be at work. This accident occurred at Chatham Four Corners, Columbia Co., N. Y. In 1844 Mr. Kelly came to this county, (Clinton,) where he has since resided.

Fourteen years ago he was taken very dangerously ill with pneumonia, accompanied with a very severe and irregular palpitation of the heart. Dr. Terry, who attended him at that time, says he did not expect his recovery. Ever since that sickness his heart has shown symptoms of organic disease, at times beating in such a tempestuous manner, that one standing ten or fifteen feet from him could see its action very distinctly. Ever since he was shot he has had strabismus, and, at times, inflammation of the right eye.

His last sickness was caused by his going into the water, ten days before his death, and taking a severe cold; his heart then commenced its actions with redoubled fury, accompanied with dysphonia, and severe pain in his shoulders and arms. His right arm became purple and cold before death.

On Friday, June 15th, 1860, I made the post-mortem examination, by request of Dr. Terry, who was his attending physician. The autopsy revealed a condition of things I did not expect. The right subclavian artery was filled with ossific matter at the thyroid axis; the other arteries were healthy. The right internal jugular and subclavian veins were enlarged; the right external jugular was closed

near its union with the internal; I found the remains of the vessel where it entered the internal jugular.

The upper lobe of the right lung was congested. There were no tubercles in the lungs, but there was considerable pleuritic adhesion.

The heart was enlarged, and undergoing fatty degeneration. The pericardium was very adherent; so much so that I could not separate it from the heart, without cutting either one or the other. At the lower part of the right ventricle I felt a hard lump. I passed my finger into the right ventricle, and found the lump to be in the wall of the ventricle, near its lower part. I then cut with my scalpel from the outside down upon the lump, and found it to be a leaden bullet, slightly flattened.

Now the query arises, How long had this bullet been in the heart? I will not advance any theory of mine; I think the facts of the case tell the story, without any theorizing.

Abstracts and Translations from Foreign Journals. Prepared expressly for the MONTHLY.

THE UTILIZATION OF EVERYTHING FOR FOOD IN CHINA.

BY THE ABBE LE NOIR.

The progress of Chinese civilization cannot be compared with that of Europe. The Mongolic progress takes place, or rather has taken place, with a special characteristic of slowness that has been of value. Agriculture, for example, has so progressed in this immense empire, through the system of small patriarchal estates, that no country on the globe can contend now with China in the abundance of its agricultural products, although this does not prevent, in consequence of the enormous population, (if the census were known, it would probably reach four hundred millions,) an occasional destruction by famine, which has reached even to a hundred thousand victims.

The Chinese have long recognized the necessity of losing nothing; they have conquered natural repugnances, and introduced many natural products, which we reject, into their ordinary food. The lower classes, first, have employed substances despised by the rich; for with the former, children of necessity, all movements of progress take birth, which are afterwards adopted by every one. * * Dogs' flesh is considered, in Europe, as the worst kind of meat; it is called unmasticable. The Chinese have decided otherwise; they fatten dogs that are getting old and eat them; the butchers' stalls are garnished with

dogs' meat as well as with that of other animals. The farmers breed a certain race of dogs suitable for fattening, which they call market-dogs, (*chiens de boucherie;*) among these may be mentioned a variety of wolf-dog, with upright ears, remarkable in that the tongue, palate, and the whole interior of the fauces are of a black color. * * In certain restaurants of *our* large cities, cats are sometimes served up for rabbits; the Chinese use no such deceptions, considering cat's meat excellent, and at provision stores may be seen enormous cats suspended with their heads and tails. On all the farms, these animals may be seen, attached to light chains, undergoing fattening with the refuse rice that would be thrown away. The cats are large, resembling those found in our counting-rooms and parlors; the rest imposed on them facilitates the fattening process.

The rat also occupies a large place in the nutrition of the Chinese; it is eaten like the meats just described, either fresh or salted; the salted are chiefly destined for the junks. The farmers, seeing that this article is profitable, have even devised a plan by which they can reap some advantage from the fecundity of this animal. They have *Ratteries;* to establish these rat-lodges, they place in the corners of walls, that rats frequent, bottles with necks large enough to admit the hand; the animal, mistaking these bottles, fastened in the walls, for crevices, makes its nest in them, raises its young, and the farmer goes from time to time to remove the young rats, just as pigeons are removed from nests in pigeon-houses.

From rodents, let us pass to batrachians. In some countries the hind legs of frogs are eaten; the Chinese eat them entire, looking upon them only as we do on little birds. Still further, what is to be eaten must be decided by taste and not by appearance—a very rational Chinese proverb. The Chinese having tasted the toad and having found it good, have made it one of their ordinary articles of food, despite its repulsive appearance. In China not a single toad is wantonly destroyed.

One word as to the mode of preparing these meats so as to remove all feeling of repugnance. The animals, or quarters of animals, generally pass through the hands of the roasters, and these are the most celebrated in the world. They have fire-places so constructed that the fire is somewhat elevated; below, there is a support, to which are attached strings with hooks; these carry the article to be roasted, and the roaster from time to time twists the string above, so that by its untwisting and twisting the piece may be turned. The meats thus prepared are minced with a knife, and converted into hash, the form

in which they are generally eaten. A national sauce, called *sania*, is usually added, and rice serves for bread. On the tables of the rich, not less than thirty or forty such hashes are found, differing only in taste. One does not know what he eats. Dinner begins with preserved fruits, and rice has the honor of being the last mouthful.

The French use nearly all the shell-fish of salt water; the Chinese also eat those that live in fresh water and on land, such as muscles, &c. They have a species of monstrous snail—*voluto melo*—which is a favorite dish. * * The Australians devour the glutinous zoophytes which the sea throws up on their coasts; the Chinese employ them also, and, by aid of gastronomic proceedings, make good soups. In this class may be mentioned the *tre-pang*—Holothuria—which are dried and salted. They delight in everything that is gelatinous, mucilaginous and cartilaginous; sharks' fins, their swimming bladders, which they call *fish-stomachs*, the tendons of all animals, &c. All these are dried for purposes of alimentation.

Among the fish that are dried are some small ones caught by cormorants, which are employed by the Chinese fishermen. They are brought up with a ring soldered on the neck, which, being retracted, so closes the œsophagus that they can only swallow gelatinous materials. The fisherman carries several of the birds in the stern of his boat—setting them free on the sea, they plunge on the fish, seize and try to swallow it; but the ring preventing the passage of the fish, the bird returns to the boat to be freed from a body which is suffocating it, and the fisherman removes the fish.

In China there are some districts where the *arachnidæ* are a choice dish, and consequently the larvæ of insects—caterpillars of all kinds—are a common article of food. *One* deserves to be noticed—the silkworm; the Chinese hatch more than they have leaves of the mulberry, ailanthus, oak, &c., to feed until they arrive at maturity, and all that cannot be fed are cooked and eaten. And here is something still more strange. The chrysales of the cocoons are not lost; they are cooked, and form one of the prized aliments of the Mongolic race. A naval officer, who had eaten them, said lately that they were quite good, and compared a plate of chrysales to a plate of *maroons*. They also eat earth-worms, but only in times of great distress, considering them poor food.

Hatched eggs must not be omitted, nor confounded with putrid eggs; the former are eaten fresh, or preserved, cooked, and salted. They are preferred when they contain the young animal almost ready to break the shell. Their duck-boats are decorated with cages which

serve as a home for the ducks during the night, and with furnaces for hatching their eggs. As many as five thousand eggs have been hatched on some of these boats. The ducks are set free during the day, feeding on what is found in the rivers, returning to their floating home at night. A portion of the eggs thus hatched is destined for reproduction, and another portion is devoted to sale as public food.

A few words are required as to the birds' nests. These are nests of a swallow which frequents the seashore. It is found somewhat abundantly in the islands of Oceanica, Java, the Celebees, and the Molaccas, and along the Chinese coasts. Birds' nest soup is a luxury, if we may judge by its cost. Throughout China aphrodisaic virtues are attributed to it; in rich society, they endeavor to resuscitate passion by this food, which of course fails. These birds' nests have no other merit than that of containing about nine per cent. of nitrogen, which makes them nutritious and strengthening.

Many errors have prevailed as to the nature of this strange alimentary product. Some have said that the sparrow made it of a mastic that it prepared from the semen of the whale, obtained in the foam of the sea; others that it was formed from fish-spawn malaxated with saliva in its beak; others that it extracts this gelatinous substance from a species of Algæ or Lichen which it obtained on the rocks at ebb-tide. The truth is, that the nest is an immediate animal product of a peculiar kind—a species of mucus that the bird has the property of secreting in its beak, at the period of reproduction, in such quantity that it is able to construct its nest entirely of it. Payen calls this substance *cubilose*, from *cubile*, because it is produced by the sparrow for the preparation of a bed for its young. In studying carefully the internal structure of this white hemisphere glued to the rock, it is found composed of small filaments adhering together, and one is brought to the conclusion that the sparrow draws these out with its beak, like the silk-worm spins its cocoon. On account of this peculiarity in construction, the nest, (which is very hard,) when dissolved in water and converted into soup, still shows one portion in the form of a very fine vermicelli, while the remainder has dissolved as a jelly, and furnishes a soup of the clear brown color of strong beef soup.

The bird first constructs an external envelope out of small yellow roots, similar to those of the millet that are found in the sands of the seashore; then it forms the nest proper with its mucus, and it seems as if it drew out some of its feathers to decorate the interior, so that its eggs and little ones could rest on a soft and warm bed. These, like our own swallows, are fond of building their nests together; hence ag-

glomerations of six, eight or ten are often found so enlaced by their envelopes as to prevent separation.

In the crevices of rocks and cliffs these nests are built; sometimes caverns are found which are filled with nests accumulated for ages. A discovery of this kind is the discovery of a treasury. It is related of a wealthy Chinaman, who, after having been ruined, repaired his fortune by means of the discovery of a bird's nest cave, the contents of which were worth a million of francs. Indeed, the article is so prized that in the years when most abundant it is sold at 100 francs per kilogramme.

All the nests are not equally pure. Those that are perfectly white, after being cleansed, contain only the mucus of the bird. But when the bird has been disturbed in its first construction, either by enemies, such as birds of prey, serpents, or man, or by tempests, accidents, &c., it has no longer sufficient of its proper secretion to construct another nest, and its instinct teaches it to employ the mucus as a species of mortar to agglomerate other substances, such as algæ taken from rocky banks, and hence the cause of the belief that the nests were made from lichens. These impure nests are used also, but they are cheaper, and not in demand.

In making the soup, 120 grammes (corresponding in amount to one nest, or a nest and a half,) are put in a half litre of water, and boiled for two hours. It is very pleasant to the taste, although having a peculiar aroma. Soup for one man would cost in China 12 francs. In Paris they have been sold at one franc a gramme, 100 francs a kilogramme; and soup for one man would cost 120 francs.—*L'Union Médicale.* L. H. S.

MEDICINE AND SURGERY IN CHINA.

BY M. G. PAUTHIER.

The practice of medicine and surgery is, in China, a very honorable profession, at the head of which is an Academy of Medicine, (*Tai i youan,*) located at Pekin. The object of the latter is to maintain, in all its integrity, the science of medical practice, which dates from 3,000 years before our era, and to direct those entering upon such a career. The members composing this Academy are 115, 15 of whom are imperial physicians, (*Yu i,*) 30 practitioners, 40 doctors of medicine, and 30 aspirants. The imperial physicians are, in turn, on duty near the emperor and imperial family. They are often dispatched by the emperor to attend upon princes, princesses, ministers of State, and other great functionaries, when his majesty hears that they are sick.

Chinese medicine divides all diseases in *nine* great divisions, as follows: 1, Those affecting the pulse violently; 2, Those affecting it moderately; 3, Diseases produced by cold; 4, Diseases peculiar to women; 5, Cutaneous and painful diseases; 6, Diseases needing bleeding; 7, Diseases of the eye; 8, Diseases of the mouth and teeth; 9, Diseases of the bones. The physicians seem to have a tolerably good knowledge of anatomy, if we dare judge by the plates contained in their books. Their physiology rests on the system of two principles, *Yang* and *Ying*, or the *strong* and *weak* principle; the *male* and *female* principle, whose *equilibrium* and *harmony* constitute *the normal state*, and the predominance of either a *diseased* condition. Semeiology seems somewhat advanced with them; the practice of medicine having been, so to speak, hereditary in families, observation of diseases has produced the art of recognizing them, which has been pushed very far. I learn from several French missionaries, who have been treated by Chinese physicians in China, that these exhibited an extraordinary aptness in recognizing the external signs of disease. Observation of the movements of the pulse, on which they place four fingers of the hand, is carried much further than in Europe.

The practice of medicine is called "the benevolent art," *(jen chou,)* and is placed second to the profession of literature, which is the first. The following are the conditions exacted from those wishing to practice medicine: a *celebrated practitioner* must be sought out as teacher, to learn the principles of the science and the properties of remedies; the best authors that can be secured must be studied. Such works are common and numerous in China. When the student has accomplished the study of the best medical treatises, and has followed for a sufficient time the practice of his patron, he can practice himself. There are no public schools in the empire where medical students take their degrees and are publicly received as doctors; the great college at Pekin, and the academy alone, require examinations and confer diplomas on those who, desiring them, are recognized as worthy. The Chinese penal code provides for cases where ignorant men practice medicine with the sole idea of gain, and without the necessary knowledge.

"As for those who shall exercise medicine or surgery, (literally *internal* medical practice and *external* medical practice,) without understanding them, who shall administer drugs or operate with a piercing or cutting instrument contrary to practice and established rules, and, by such a course, shall have caused the death of the patient, the magistrates shall summon others of the profession to examine into the

nature of the remedy employed, or of the operation performed, which has been followed by the death of the patient. If it is manifest that they can be accused only of having acted through error, and without the intention of injuring, the physician or surgeon can be freed from the punishment inflicted on a homicide, in the way adopted in cases of accidental killing; but they will be obliged to give up the profession absolutely."

"If it shall appear that a physician or surgeon has intentionally not followed the established rules of practice, and while pretending to conquer the disease he really renders it more serious, so that the cure may bring him in more money, the sum which he shall have gained in this way will be regarded as stolen, and the punishment will be proportioned to the fees that he has received."

When a patient has died, and the physician or surgeon who has attended him, during the course of the disease, shall be convicted of having designedly employed injurious drugs, or of having done other injuries to his health designedly, he shall undergo decapitation, after having been retained in prison until the proper season."

The ordinary practice of medicine is principally based on very delicate and minute observation of the patient's pulse, on which curious treatises have been written. The rules of practice, recommended to Chinese physicians, are comprised in these four words: *wang, wen, wen, thsiei; examine, listen, question, feel.* These words are explained in this way: 1. *Examine* the countenance or physiognomy of the patient; 2. Notice the sound of his voice by *hearing* him speak; 3. Question him as to the origin or cause of the disease; 4. Feel his pulse.

The most common *surgical operations* among the Chinese are scarifications and acupuncture, which is done by needles figured in their surgical treatises. They treat fractures by means of bamboo splints, after having restored the fractured portions to their proper place. They also use internal medicines, which, they say, possess the property of uniting bones.

As for the resources of the general therapeutics of China, in cities where Europeans reside, as Macao, Canton, Shanghai, Ningpo, Amoy, Hong Kong, these are nearly the same as in Europe, with some Chinese medicines added. The Chinese *materia medica* embraces, in some way or other, all creation. We learn from a treatise on this subject by *Li-chi-tchan*, in 40 vols., "all things produced in the world, birds, quadrupeds, insects and fishes, have power over the breath and the circulating blood; the same is true of flowers and trees, which, although possessed of life, are not supplied with either breath or venous blood;

inanimate objects also, such as stones and metals, may be employed as therapeutic agents." The objects examined, in the Chinese book in question, are comprised in 1,871 genera or classes.

All the medicines employed by the Chinese are not prepared by licensed pharmaceutists, but by those who have acquired knowledge in this kind of business—the herborists—who sometimes hawk their merchandise about.—*L' Union Médicale.* L. H. S.

DALTONISM NOT CONGENITAL.

BY DR. CLEMENS, OF FRANKFORT.

It is known that many persons are affected congenitally with blindness to all colors, or to certain of these, or rather that many persons receive from certain colors an impression differing from that ordinarily produced. Cases, in which this alteration is *acquired*, are comparatively rare, and hence the following is of interest.

A lady, thirty-two years of age, always enjoying good health, the mother of three children and then in the fifth month of her fourth pregnancy, was walking with her friends. They met a woman wearing a flashy red shawl, which attracted attention; the lady making no remark at it, her opinion was asked, and she answered that she saw nothing extraordinary, as the shawl was of a gray-mixed color. This was probably the beginning of the disease, since the husband stated that some days afterwards his wife, in buying goods, rejected some because they contained red and yellow. About the middle of her first pregnancy an analogous condition existed for a short time. She was working at a piece of embroidery requiring many colors, and, on different occasions, the colors seemed, as it were, to run with each other at their lines of contact, and when an effort was made to determine the terminal lines of the colors, she saw a mixed gray, and a nausea supervened, almost producing vomiting. Her eyes appeared a little dissimilar—the left being somewhat more prominent than the right; the pupils were slightly dilated, and not very sensible to light. All the functions were normal. None of her relatives have been affected with this alteration of vision. The patient often confounds red and green in a peculiar manner. Thus, if the two colors are shown at the same time, they are confounded the one with the other, while the red being shown by itself, is never taken for green. Flashy red objects, seen alone, appear of a dirty grayish-brown. The loss of perception of red is in no instance more marked than when a pure red is shown on a white background; for example, carmine on a porcelain saucer. All that remains of the color is its skeleton; that is, the shade.

During ten days the phenomena seemed to increase; red and green became more confounded, and the shades of other colors were only recognized by careful attention. Thus she confounded yellow colors with orange, and blue with light red tints.

Dr. Clemens follows this report with physiological and pathological considerations in this disease of vision and other analogues. Passing in review the different theories which have been advanced on the subject, he shows their unsoundness; and attaches himself to the theory of Schapenhauer, which does not recognize colors as having an existence in themselves, but as products of the retina.—*Gazette des Hôpitaux.* L. H. S.

SANTONINE—ITS EFFECTS ON VISION AND THE URINE.

FROM THE FRENCH, FOR THE MONTHLY.

Mons. de Martini notices that the employment of santonine is followed by two distinct effects—a coloration of vision and of the urine; and of these, the former is much the more curious. Of those who have taken santonine, most see objects colored green, some blue, and others a pale yellow. The following singular case is narrated: A woman, seventy years of age, had experienced for some time a weakness of sight in the left eye. The exterior of the eye exhibited no alteration; the pupil was slightly sensible to light, and larger than that of the right eye—in the aqueous humor a slight white mist was perceptible. She was scarcely able to distinguish light. Santonine was administered, 4 to 6 grains daily, beginning on the 10th of March; on the 15th the patient saw, four or five times during the day, objects colored greenish-yellow, even with the affected eye. On the 18th eight grains of santonine were given, and in addition to the fact that objects were colored as before, the patient began to recognize the forms of the assistants. On the 20th and 22d of March, she saw objects colored yellow, but continued to recognize them still better. The administration of santonine ceasing, the improvement continued.

L. H. S.

THE VALUE OF SULPHATE OF CINCHONIA IN INTERMITTENT FEVER.

BY DR. MOUTARD-MARTIN.

The author of this memoir presents the following conclusions:

1. Sulphate of cinchonia has an incontestable, although variable, action in intermittent fevers.

2. Sometimes its action is rapid, and it cuts off the attack like sulphate of quinia; at other times it is slow, whatever be the dose, and the paroxysms are gradually checked.

3. The dose should always be larger, at least one-third more than that of sulphate of quinia under the same circumstances.

4. To obtain its curative action, the dose will vary from nine to fifteen grains; at this dose it produces frequently some physiological effects, which it would not be prudent to exceed.

5. Its therapeutic is not proportional to its physiological action, since it cures at times without any perception of the latter; and in other cases where the physiological action is energetic, the therapeutic action fails.

6. It cannot replace sulphate of quinia in the treatment of severe intermittent fever, but may be considered an important adjuvant to the latter, completing the cure begun by the same.—*L'Union Médicale.* L. H. S.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. GIBBS, M.D., Frewsburg, N. Y.

Bismuth in the Treatment of Burns.—In the *N. A. Medico-Chirurgical Review*, for July, Prof. T. G. Richardson has an article on the treatment of burns and scalds with the subnitrate of bismuth. He says he has previously been in the habit of using the white-lead and linseed oil, as first recommended by Prof. S. D. Gross. Though he considers this treatment with lead superior to all other applications previously recommended, he says, "I am now convinced by ample experience that the bismuth is better." * * * "I was induced to give it a trial from a consideration of its well-known effect in calming irritation, and even actual inflammation occurring in mucous membranes, the condition of these structures under such circumstances bearing a very close analogy to that of the skin after a burn of the first or second degree. When I first began its use, I combined it with linseed oil in such proportions as to form a consistent paint, but subsequently substituted glycerine for the oil, and I am now inclined to think that the combination can never be surpassed, since by it every local indication is fully met." To prepare it, it is only necessary to rub the bismuth in a mortar with a sufficient amount of glycerine to form a paste or thick paint, which should be applied to the affected surface by means of a camel's-hair pencil, or a mop made of soft linen." * * "In burns of the first degree, one such application will often suffice; but in those of the second degree, it may be necessary to repeat it, in

part at least, from day to day, in consequence of its disturbance and the wetting of the cotton by the subjacent discharges."

We have neglected to mention that, after the application of the bismuth and glycerine, Prof. Richardson advises that the parts be covered "with a sheet of clean carded cotton, or a layer of cotton batting, which may be confined, if necessary, by a thin bandage lightly applied." He says, "The carded cotton or cotton batting I look upon as a most valuable adjuvant, and is superior to anything with which I am acquainted for warding off pressure."

Dr. W. C. Nichols, House Surgeon of the Charity Hospital, New Orleans, upon the recommendation of Dr. Richardson, has put the bismuth and glycerine to the test of experience, and "freely accords to it all the praise which Prof. Richardson bestows upon it."

Opium in Pneumonia.—In the Report of cases of Pneumonia, treated at the Charity Hospital, N. O., under the charge of Prof. Austin Flint, and by him reported for the *New Orleans Medical News and Hospital Gazette*, for July, the following language occurs in regard to the use of opium in pneumonia: "Of the value of opium in the treatment of pneumonia, my experience has furnished abundant evidence during the last five or six years; and the more my experience accumulates, the more am I satisfied that the free use of this drug will come to be regarded as a very important measure in the management of certain cases of the disease."

Our experience is in full conformity with the above, and we are happy to adduce so high an authority in support of our opinions, long since entertained and expressed. Though most authoritative writers condemn the use of opium in pneumonia, we were early induced to depart from standard authorities, and each year's experience but adds to our conviction of its propriety, and to our confidence in its utility. Our own views are given in the MONTHLY for January last, in a notice of W. W. Gerhard's work upon Diseases of the Chest.

Treatment of Yellow Fever.—In the *New Orleans Medical News and Hospital Gazette*, for July, Dr. F. Poland, of Houston, Texas, has an article upon the treatment of yellow fever. He has derived favorable results from the use of nitro-muriatic acid and chlorine. Even after the occurrence of black vomit, he says the medicine often acts charmingly. Chlorine is by no means a new remedy—it forms a part of the compound so successful in the hands of Prof. Fenner and others, who have put it to the test. The prescription used by Dr. Fenner we gave in our *Summary* for June. The following is the formula of Dr. Poland:

℞.—" Acid. nitro-muriatici,
Liq. chlorini, āā, ʒij.
Syr. aurant., ℥j.
Aquæ dist. q. s. mist., ℥vj.

S.—Table-spoonful every two or three hours." This he uses in all stages of the disease.

Delivery of the Placenta in Abortion in Early Pregnancy.—In the *Lancet and Observer*, for July, Dr. L. D. Sheets has an article upon the above subject.

It is a generally acknowledged fact that most of the alarming cases of hæmorrhage, accompanying early abortion, are caused by a *partially* detached placenta. In such cases the complete detachment and removal of the same constitutes the appropriate treatment. The important inquiry is, how can this best be done? But to the paper. In regard to diagnosis, Dr. Sheets says, "We make out the diagnosis by the *touch*, as we can often, without any extra effort, feel part of the after-birth at the internal os; but if this examination prove unsatisfactory—if we feel nothing—we must introduce the finger still further, *until we can traverse the whole internal surface of the womb*, and in perhaps every case we will find a placenta." This may be a feat of easy performance, but we have seen cases in which we could not perform it, and we have the satisfaction of knowing that some of our ablest and most experienced obstetricians have been placed in the same unfortunate condition. Hence, it may be well for the young practitioner to be prepared for a failure in this regard, and it may not be amiss to be acquainted with other resources.

We give Dr. Sheets' method of removing the placenta in these cases, which removal is really the object ever to be had in view. "My method is to remove the placenta with the index finger, on which I always keep a tolerably long nail, for the purpose of separating the after-birth from the womb. The nail should not be too long, or it will not be sufficiently firm, and may bend backward while using it. Push the uterus as low down in the pelvis as possible, and retain it there with the left hand, while you introduce the index finger of the right hand into its cavity, and pull off the placenta, and remove it. Sometimes it is a little difficult to separate with a single finger, and I do not get quite all removed; but it is so much broken up as to arrest the violence of the hæmorrhage, and render the tampon, &c., unnecessary; in a few days the remainder will come away piecemeal."

So it seems that Dr. Sheets is not always quite successful in the removal. We have a horror of "piecemeals," and believe tha

cess may always crown our efforts. Because of the vast importance of the subject, our readers will pardon a few comments, if even a little critical. Dr. Sheets may always, by this means, arrest the hæmorrhage; but we know that we cannot, and we fear there may be some that might be alike unfortunate, and, hence, for us, there must be found another and easier road to success.

We have seen several cases in which it was all we could do, with justifiable force, to touch the os, saying nothing of "traversing the whole interior of the womb."

Prof. Meigs is free to confess that there are a good many cases of "abortion in the early stages," in which he has failed to extract the placenta. Of this acknowledgment Dr. Sheets, says, "How remarkable that the corypheus of obstetricians in this country should fail in what *can be performed in every instance!*"

Has he forgotten that he sometimes succeeded only in part? When Dr. Sheets has seen, as we have, a girl of 14 years, about at two and a half months, with a vagina undisturbed by previous childbearing, and, because of youth, at best but imperfectly developed, and the os uteri only just within reach, he may find a case of failure, unless he has a very small hand, or has a finger-nail two inches in length. Ramsbotham and others have called attention to the fact that there are some cases in which the hand cannot be introduced into the vagina. Dr. Sheets thinks it strange that it should not occur to so sagacious authors that if the hand cannot, the finger can. We repeat, that we have had cases in which the finger was not long enough. We suppose that others may be as unfortunate. Dr. Sheet says, "On account of having *short fingers*, I am often obliged to introduce my hand into the vagina; but I *always reach the fundus of the womb without difficulty.*" We repeat, there are cases where a physician would not be justified in using the requisite force for the introduction of an ordinary-sized hand, at least so long as there is a better, easier, more expeditious, and less painful way to accomplish the same end. Bearing upon this point, we quote, with pleasure, from Dr. A. K. Gardner, of New York. He says, "How shall the small and fragile placenta be seized hold of and withdrawn? Some have recommended the introduction of one finger into the uterus, and bringing down one edge of the placenta, and twisting it round and round, not only thus to detach the entire mass, but to also so shape it that it may the more easily pass through the os. Where this can be done, by all means do so! But it should be remembered that in the great mass of cases *it is impossible to reach the os, so as to pass one finger into the cavity;* far less to

effect any good result, if it arrive there, to say nothing of the utter impossibility of aiding the finger with the thumb of the same hand." Thus it will be seen that we are not alone in finding cases in which the unaided finger is inadequate to the successful treatment.

Dr. Sheets has a poor opinion of the tampon in these cases, believing them to be productive of much mischief. In this opinion we concur most heartily, but we cannot join him in the condemnation of instrumental aids in the delivery of the placenta. We have seen that, however successful Dr. Sheets may be in making the unaided finger accomplish all that is desired, there are those, and we among them, who are very far from being so successful.

We have been in the habit, for some time past, of delivering the placenta, in these cases, with Carey's *decidual separator*, if the finger is inadequate to the end. With this the separation is easily made, the evulsion speedily accomplished, and the consequent hæmorrhage ceases at once and permanently. The irritation from the introduction of the instrument is far less than from the introduction of the hand, especially when the abortion is in a primipara, and at a stage anterior to the fourth month. Our rule is to lose no time with the trial of styptics, the tampon, &c., but to separate the placenta, and remove the secundines at once, *with the finger if we can, and with instruments if we must*. At all events, effect the removal, and the hæmorrhage ceases, and all danger is past.

Uterine Neuralgia.—In the *Lancet and Observer* for July, Dr. E. J. Fountain reports a case of severe uterine neuralgia, which resisted the usual treatment; large and repeated doses of opium included. At this stage he says: "Recollecting an account of a case of facial neuralgia promptly arrested by the muriate of ammonia, published in *Braithwaite's Retrospect*, I concluded to give it a trial in this case. I ordered half a drachm to be taken every hour, until some effect should be produced. She began to feel some relief shortly after the first dose, still more after the second, and the third dose removed every vestige of pain, and she dropped into a natural and refreshing sleep, the first she had enjoyed for ten or twelve days. She continued taking the preparation for several days, three times each day, in gradually diminishing doses, and had not the slightest return of the difficulty."

Anti-Lactescent Properties of Belladonna.—Dr. Fountain, in the same number of the *Lancet and Observer* just referred to, reports a case of a lady whose breasts had continued to secrete milk without cessation for three years. Various remedies had been brought to bear upon

the case, and persistent effort made to arrest the secretion, without effect.

Dr. Fountain ordered the following:

℞.—" Ext. belladonnæ,
Ung. glycerini, āā ℥ij. M.

To be rubbed freely over *all* the breast, and covered with oiled silk to protect the clothing. By the time this was all used, less than a week, the secretion of milk was entirely arrested, and has not since returned." In our hands the belladonna has so often and speedily arrested the secretion of milk, and thus abated mammary inflammation and prevented abscess, that we regard it as much a specific in these cases, when timely and properly used, as is quinine in ague. We have used Tilden's fluid extract, without admixture.

Artificial Respiration for the Cure of Opium Poisoning.—In the *Chicago Medical Journal* for July, Dr. A. Groesbeck reports a case in which a fluid ounce of laudanum was taken, and life preserved by the *ready method* of Marshall Hall. An hour after the laudanum was taken the stomach was emptied by means of a pump. A little later " he sank into a profound coma; his pulse scarcely perceptible; skin cold; face turgid and livid, with, at times, hardly a sign of life." Artificial respiration was now resorted to, by the method proposed by Dr. Hall, and was kept up for nearly six hours before signs of improvement commenced. From this point improvement was rapid, and recovery was after a little complete.

This is not new treatment, but it is additional evidence of the utility of artificial respiration for the relief of opium poisoning.

Quinine as a Prophylactic of Malarious Diseases.—In the *Charleston Medical Journal and Review*, for July, Dr. H. W. De Saussure has an article on the preventive power of quinine over intermittent and remittent fevers. Many facts giving evidence of such power are given, but our space will not admit of recapitulation. We instance only one or two. In 1840–'41 the English government sent two well-manned vessels to explore the river Niger. Of the two ships' crews, all were sick with malarious diseases, the expedition was abandoned, and but very few returned alive. In 1854–'55 the effort was renewed. From the time of entering the river, until the time of leaving, a period of two years, five grains of quinine were taken in the morning by every man in the expedition, and but very few suffered from disease—the expedition accomplished its object, and returned without the loss of a man with malarious disease, and the crew presented every evidence of robust health. We quote one circumstance that came under Dr. De

Saussure's observation. "I was called in August to see one of the contractors on the Charleston and Savannah Railroad, laboring under a very severe attack of remittent fever, contracted during superintendence of his contract between the Ashepoo and Combahee Rivers, notoriously a very unhealthy region. During his convalescence, he informed me that he had a large number of hands employed (150); that they were negroes brought from healthy regions in North Carolina, and he expected all of them to be more or less sick, as they were entirely unaccustomed to a malarious climate. I advised him to take quinine daily himself, and to give it to all his hands, white or black. Late in the fall, I met him in the city; he looked healthy and well. He thanked me for the advice I had given him; told me he had carried up some pounds of quinine; had used it himself daily, and compelled all his employees to take it also; that he himself had never had another attack of fever, that his health was better than it had ever been, and that not a single one of the 150 hands he employed had been attacked by fever."

For those who have never doubted the prophylactic powers of quinine over malarious diseases, the cases referred to in the paper under consideration are quite conclusive. Still there are some who consider quinine a poison, and detrimental to any constitution long under its influence. It will be remembered, however, that the men in the Niger River Expedition took the quinine daily for two years, and yet each presented the appearance of robust health. In all the cases referred to, quinine seemed to augment the conditions of health rather than to produce any injurious consequences upon the constitution.

Epilepsy.—In the *Charleston Medical Journal and Review*, for July, Dr. W. M. Cornell has an article on the treatment of epilepsy. Dr. Cornell has given considerable attention to this disease, and has previously published essays upon the subject, giving expression to his opinions.

The following formula has given good results in his hands, in suitable cases:

℞.—" Spiritus vini gallici,	Oj.
Tinct. stramonii dat.,	℥jv.
Sulph. Zinci,	ʒij.
Solv. zinc. in aquam distil.,	℥j.
Add sol. tincturæ.	

S.—Commence with gtt. No. 10; increase by one gtt. till the specific effects of the narcotic appear, then keep as near that maximum dose as the circumstances indicate." * * In epilepsy, caused

by *self-abuse*, Dr. Cornell speaks highly of oil of cloves, which he regards "as worthy of trial in all cases of this kind."

General Bloodletting.—In the *Atlanta Medical and Surgical Journal*, for July, Dr. Robert Southgate has a well-written article of 42 pages upon the subject of bloodletting in the treatment of disease. The doctor leans "to the opinion, that we are making a retrograde movement in the growing tendency to give up general bleeding in the treatment of disease," and says "if the medical history of the past teaches any truth in reference to the future, there is a destined reaction to take place in medical opinion. Another petechial fever may break out, in which indirect will be mistaken for direct debility. Another Rasori, captivated by the simplicity of the doctrine, will resort to stimulation, and be awe-stricken by the frightful mortality. Is it not the duty of each one of us to give this subject a thoughtful reconsideration?" While he admits that, during the last half century, there has been a great and wholesome revolution effected in the science and art of medicine, he thinks that revolution is taking quite too headlong a course, and says, "I verily believe that some of our most valuable therapeutic means are falling into unmerited disrepute; and that the future improvement of practical medicine will depend upon a careful review of them all—their powers for good and evil, and their peculiar adaptation, under the cautious guidance of reason, judgment, and common sense, to the relief of the various morbid conditions we are called upon to treat."

Dr. Southgate's opinions are worthy of respect, for, having been long in public service, he has observed disease in diversified localities, "from the great lakes of the North, to the San Saba River in Texas; and from regions far beyond the Mississippi, to the shores of the Atlantic." Space will not permit a full synopsis of the opinions and arguments of Dr. Southgate; yet, in the fulfillment of our purpose to make our *Summary* a complete index to all important practical original papers to be found in the current medical journal literature, we cannot pass by the one under consideration without briefly indicating its contents. Dr. Southgate commences his application of general bloodletting to the treatment of disease, with *pneumonia.* He is an advocate of bloodletting in the early stages of this disease, believing that it is a powerful remedy for the prevention of the exudation of lymph, which often fills the air-cells and interferes largely with the aeration of the blood. Our readers may think we stand committed to an opposite opinion; but this is not so. We have never denied the utility of bloodletting in pneumonia—all we have attempted is to prove

that *all* cases do not *require* it. In fact, we have not seen a case that did for the last three years, but how soon we may is quite uncertain. As pneumonia has presented itself to us, for the three last years, quinine and opium have been admirably adapted; but we are confident that to treat all cases, in all places, thus, would be an error only surpassed by the more common one of bleeding in all cases. But we are digressing from the paper. Dr. Southgate says, "We all know that many cases of pneumonia will recover without bloodletting, or other active treatment; that rest in bed, the removal of all sources of irritation, warm poultices to the chest, mild diaphoretic and demulcent drinks, will, in time, effect a perfect restoration. But if from this we are in danger of arriving at a generalization, false—and if false, fatal—that general bloodletting is never necessary in pneumonia, is it not our duty to pause and reflect whether the current with which the medical mind is now drifting will carry it to a safe anchorage; or whether our bark, freighted with such precious interests, is not being wafted towards shoals and rocks and deceitful quicksands, on which it may experience a disastrous shipwreck?"

Dr. Southgate says he is satisfied, from a reasonable experience, of the utility of general bloodletting in the cold stage of *malarial fever*. It seems to us that cases requiring such treatment must be very few. When the patient is first seen in the chill, and that chill is of a congestive character, calculated to do injury, perhaps general bloodletting might be of service, as a temporary means, while waiting for the period, anterior to the next paroxysm, in which quinine can be best administered. *Our* remedy here, unless contra-indicated by special symptoms, is a large dose of opium, which will greatly lessen the duration of the hot stage.

In *continued fevers*, except of the typhoid type, Dr. Southgate believes that bleeding is too much neglected. Malignant cases, he believes, are those where the powers of nature are "oppressed and overcome by the first attack in the disease, so as not to be able to raise regular symptoms, adequate to the violence of the fever—all appearances being quite irregular." * * "I remember to have met with an instance of this kind, several years ago, in a young man I then attended; for though he seemed, in a manner, expiring, the outward parts felt so cool that I could not persuade the attendants he had a fever, which could not disengage and show itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said they would soon see the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as

violent a fever appeared as I ever met with, and did not go off till bleeding had been used three or four times."

Dr. Southgate would recommend general bloodletting in many other diseases, but we have not space to specify. We will conclude our remarks upon this paper by referring to his opinions of bloodletting in pregnancy. Our mothers and grandmothers, who were often bled during gestation, he thinks went through with the perils of maternity with but little detriment to health, preserving their health and vigor until mature years; while, in these days, scarcely is the young wife the second time a mother, when she presents too frequently a wreck of her former self. Intra-pelvic irritations and pains harass her by day; congestions, inflammations, and ulcerations of the cervix uteri, and their sympathetic accompaniments, destroy her bloom; and we hear doctors boasting of how often they have leeched and cauterized the delicate structures." In regard to this subject he concludes by saying, "Now, may it not be possible that much of this distressing ill-health is due to the fact, that we let the sufferer go through nine long months, with her headaches and flushings, her febrile movements, her intra-pelvic pains, her gastric irritations, her bloated limbs, and the other afflictions of her most interesting state, when experience has proved that the occasional loss of a few ounces of blood from the arm would soothe her troubled system into peace and comfort."

With these quotations and remarks we leave the paper of Dr. Southgate, reminding our readers that it is one of the ablest advocates of general bloodletting, in inflammatory diseases, that has fallen under our observation. We are certainly in favor of a reconsideration of all the evidence in favor of and against bloodletting in inflammatory diseases. Because we have regarded this subject of the first importance, have we given the above space to its consideration. We shall recur to it on a future and suitable occasion. The paper of Dr. Southgate appears also in the *Southern Medical and Surgical Journal*, for July, and we understand the author has also issued it in pamphlet form.

Quinine in Cholera Infantum.—In the *Oglethorpe Medical and Surgical Journal*, for May, Dr. J. S. Rich, of Florida, has an article upon the treatment of cholera infantum. He says he has seen much of the disease, but his success was not remarkable until, in 1855, he commenced treating with large doses of quinine. Among others, he reports the case of his own child. We quote his treatment; the following was ordered:

℞.—" Calomel,	grs. iij.		
Sul. quinine,	grs. v.		
Oil tereb.,	gutt. xx.		
Honey,	℈j.	Mix.	S.,

given at one dose. In the course of some twelve hours this dose was repeated, (omitting the calomel.) Under the influence of these doses, for the period of some thirty-six hours, I could not detect any other effect of the quinine, than a most profound and salutary sleep; the pulse, which had been much too frequent, irregular, thread-like, and fluctuating, became slow, as in health, and firm; the skin was continually moist with warm perspiration; the kidneys acted most copiously; bowels acted twice, the last showing the liver was performing its healthy functions. The most remarkable change was the disappearance of the general cadaverous aspect and *grave-yard odor*. The return of appetite and general powers of digestion was extraordinary."

Vaccination.—In the *Maryland and Virginia Medical Journal*, for July, Dr. Blair Burwell has an able article upon the subject of *Varioloid*, and the protective power of vaccination. Dr. Burwell is a believer in the temporary protective power of vaccination, and adduces in proof that "the authors of all the memoirs presented to the French Academy in 1845, unanimously agreed that, with very few exceptions, the small-pox attacks those who have been vaccinated for a long period of time, and spares those who had been recently so." In regard to the duration of the protection he says: "In the cases of varioloid and small-pox which I have observed, they have never occurred until after the tenth year from vaccination, and the revaccinations which I have performed have invariably been unsuccessful previous to the seventh or eighth year from the first vaccination, and after the tenth year a large number have been successful, with a good many cases partially successful, and *very, very few* in which no impression has been produced." He thinks protective influence lasts from ten to fifteen years; and in regard to revaccination he says, "May we not be safe in recommending a regular time for renewal, midway between these two periods—say twelve to thirteen years, unless epidemic disease should require it oftener, and then we might adopt ten years."

Our space will not permit us to follow Dr. Burwell through his paper; we subjoin his concluding paragraph: "I shall continue to believe that the protective power of vaccination is temporary; that revaccination does add or renew security against the small-pox and varioloid; that the period of time for which it exerts its protection is between ten and fifteen years; that it ought to be renewed regularly between those periods; that the vaccine virus of the present day has degenerated, or become weaker in its protective powers; and, lastly, that a resort to the original source is the proper means to restore it."

Upon this subject we have, for many years, entertained different

opinions from those expressed by Dr. Burwell, at least in some particulars. If Dr. Burwell's facts are reliable, he supports his opinions with a strong array of arguments. We have not space to enter here into the discussion of the subject; but will simply suggest that, if the influence of vaccination deteriorates with time, varioloid should be more and more common and more and more severe, as the period from vaccination lengthens, *until the protection should be entirely null, and the patient should be as liable to take small-pox as before the vaccination!* Now this is not the fact. We have seen varioloid in a person 50 years after vaccination, and in a child not three months after the manifestation of the cow-pox, yet have not witnessed any marked intensity in the former case. The returns from the Army and Navy of the United Provinces of Great Britain are still more conclusive upon this point. Out of 43,800 soldiers, under 20 years of age, there were 15 deaths from varioloid; while with the increase of age and the lengthening of the interval from the period of vaccination the number of deaths gradually decreased, until out of 34,300, over 34 years of age, there was but one death from varioloid. We have studied this subject with considerable care, and consider that, so far as we are able to appreciate the evidence, the facts are in favor of the conclusion, that *protection is as good at* 50 *as at four years of age.* We confess that from 15 to 25 years of age is the period in which the most cases of varioloid make their appearance; but, as this liability to varioloid diminishes from this time on through the remainder of life, this increased susceptibility must depend upon some constitutional causes, *and not upon a diminution of the vaccine protection.* From all the facts we have been able to gather upon this subject, *we believe that a genuine and successful vaccination is a sure protection against small-pox, and, in the majority of cases, against varioloid also;* and this protection, so far as it goes, we believe to be as good at 50 years as 5 months after vaccination. In a minority of instances the susceptibility is not fully exhausted, and the patient is subject to varioloid. *By revaccination, if genuine and successful, the protection is rendered as complete as possible, and the patient, except in a very few rare instances, is no longer subject to varioloid.*

It is of but little or no consequence whether the revaccination is made 12 months or 12 years after the first vaccination. Upon this point Prof. Wood says, "I have been in the habit of vaccinating the second time for 27 years, and during that time have seen *no* case of varioloid in any one that I have revaccinated." So long, however, as there is upon this point a difference of professional opinion, and be-

cause revaccination is neither painful or otherwise objectionable, we see no impropriety, but rather an increased security, in a revaccination every 10 or 12 years. We, however, object to and deprecate any attempt to lessen public confidence in the protective powers of vaccination. There are already quite too many that neglect to avail themselves of its unmistakable advantages.

Diet for Dyspeptics.—In the *Maryland and Virginia Medical Journal* for July, Dr. A. B. Tucker has a very able article upon *dietetics.* His remarks upon the diet appropriate for the consumptive patient are very appropriate, but too lengthy to be copied here. We quote a passage in regard to the diet appropriate for the dyspeptic: "There are a variety of breads which have been offered to dyspeptics as certain remedies, from that made mechanically to that which acts mechanically; bran bread, rye bread, &c., have been supposed to exert a good influence in dyspepsia, by keeping the bowels open by their mechanical effect of irritation; an object very desirable if it can be attained, but I doubt very much the propriety of giving indigestible food to a stomach already weakened, and whose complaint is, it cannot digest."

The above idea is in full accordance with our own opinions. The idea of giving indigestible bran, &c, to a patient is quite absurd. We have, in several instances, seen indigestion perpetuated, and the patient waste as in consumption, by an injudicious dieting with indigestible substances. We well remember a case in which a bread, made by a mixtnre of wheat bran and quick-lime, wet up with cold water and baked, with no addition of yeast or other substance, formed the principal diet! Dr. Tucker says further: "Does it not seem plausible, that the constipation is due rather to the disease of the stomach, than to any lesion of the bowels, which could be overcome by mechanical irritation? I believe cold wheat bread is the most digestible, and therefore the best. I advise it to be cold and stale to some degree." It is evident that bran and other mechanical irritants, though they may relieve the constipation, are not remedial, and are only a present relief of one symptom, purchased at the risk of aggravating the real difficulty. We shall make but one other quotation from Dr. Tucker's paper: "No meat should be used," (by the dyspeptic,) "for the reason that the weak stomach would find difficulty in digesting it, and because the constituents of it can be introduced better in other forms." We do not fully subscribe to the above. We believe it is easier for an enfeebled stomach to manufacture healthy blood out of meats, than vegetables; out of good beef, than out of cabbage, potatoes, or even

bread. Extract of lean meat, concentrated beef-tea, beef cut as for sausages, and very lightly cooked, or oysters, each properly served up, are unobjectionable, as a part of the dyspeptic's diet.

A Severe Burn Treated with Alum.—In the July number of the *Maryland and Virginia Medical Journal*, Dr. Wm. M. Turner reports a case of severe burn, that was unexpectedly cured by a new method of treatment. The burn was in a person of broken-down constitution, and of intemperate habits, and was very large in extent. The Dr. saw the case first a week after the accident; he says, "A more foul and offensive wound I never saw before in the wards of any hospital. The odor was almost unbearable. The man was quivering with pain, wore an anxious look, and had a small, thready, irritable pulse."

Treatment was instituted, and continued for a considerable time, with no favorable influence. The patient continued, apparently, to sink under the exhausting influence of the offensive discharges, and occasional profuse hæmorrhages. For the purpose of arresting the hæmorrhage, powdered alum was applied, and the general influence was so good as to induce its further continuance. He says, "I continued with the alum powder, dusting the entire surface, and instead of covering with rags spread with simple cerate, I applied the cerate of the impure carbonate of zinc, or calamine cerate. This I did not spread on a cloth, but melted in a large iron spoon, and after the alum was well applied, I poured the melted cerate over the entire surface, and covered the wound with very light oil silk. From that moment I had no more trouble; the man slept so well that anodynes were dispensed with, and nature afforded rest, unaided. The tonic treatment soon produced an appetite, and rich food gave the patient good blood. The wounds healed very rapidly after commencing the alum treatment; and what is more singular, more fortunate, and very inexplicable, there was no *drawing cicatrix left*. The man is to-day in better health than he ever was, and can walk anywhere he pleases."

A New Operation for Amputation of the Foot.—In the same number of the above-mentioned Journal, Dr. A. P. Smith recommends a new operation for amputation of the foot. Instead of disarticulating, as is usual in all the various plans hitherto practiced, Dr. Smith advises a direct section of the bones. This operation is easier to perform than one that requires the knife to follow the irregular tarso-metatarsal articulations, exposes much less bone surface, and gives a granulating surface of bone rather than a cartilaginous, which is an acknowledged advantage. It is further claimed that "the granulating ends of the bones more readily form union with the surrounding

soft parts," and "the preservation of the articulations renders the result more satisfactory, and less limping and discomfort in walking."

Orchitis.—In the *Pacific Medical and Surgical Journal*, for June, Dr. E. P. Vollum has an article upon the treatment of acute orchitis. Dr. Vollum speaks highly of *tartar-emetic* in these cases, and he thinks it is preferable to any other antiphlogistic, as general bleeding, mercurials, opiates, &c. He says, "In tartar-emetic we have an agent all powerful to control the erotic erethism, and the attendant flow of blood into the congested or inflamed testicle." It is to this property that he mainly ascribes its beneficial influence. He also, because of this influence of the medicine, thinks its use is indicated in cases of enlarged prostate, cystitis, gonorrhœa, and in many pelvic affections of females.

Menorrhagia Treated with Cream of Tartar.—About twelve years ago, a writer, in some of the European journals, spoke in high terms of the *bi-tartrate of potassa* in the treatment of menorrhagia. This remedy in this affection has received but little attention at the hands of the profession, and certainly has not secured professional confidence in its powers over this disease. In the *St. Joseph Journal of Medicine and Surgery*, for July, Dr. J. A. Chambers has an article upon the subject. He says he has used the remedy for the last twelve years, in this disease, with greater success than has followed any other remedy in menorrhagia. He directs his patients to "take three teaspoonfuls of the medicine and put it in a sufficient quantity of boiling water to dissolve it, adding sugar sufficient to make it palatable, to let it cool, and drink the quantity in twenty-four hours; when that is gone, to use more in the same way."

Constipation Treated with Colchicum.—In the *Journal of Materia Medica*, for July, Dr. Joseph Bates has an article upon colchicum. Among other affections in which he speaks well of it, he mentions constipation, in which, he says, it has seldom disappointed him. "For constipation, I give eight drops (of the tincture) every four hours, and continue its use a few days, adding or diminishing the dose as circumstances may indicate."

Lupus.—In the *Boston Medical and Surgical Journal* for July 5th, Dr. J. C. White has an article upon lupus, which shows, on the part of the author, a thorough acquaintance with the subject. Upon the treatment his remarks are full; we quote the most important and more novel: "But of all remedies for lupus, the anhydrous or stick nitrate of silver is incontestably the best, and the best in every case. It can be trusted in the hand of any one, however inexperienced in the treat-

ment of the disease, and cannot possibly do harm, because it is held in complete control, and because the sound tissues are very little, if at all, affected by its contact, while the diseased parts may be thoroughly pierced and penetrated to their very bottom. It is not enough, however, as is often done, to apply it to the surface merely, but a sharply-pointed stick of the material, set firmly in a quill, must be taken, and thrust boldly down to the limits of its penetration. In the beginning of the treatment it is well to apply the caustic thus several times, at intervals of three or four days, till we obtain a smooth, even, suppurating surface. Arrived at this point, the process must be repeated twice a week, after which once will be sufficient. The scars which result from this treatment are the fairest and finest of scars."

Dr. White does not claim this as an original plan with himself. It was perhaps first put in practice by Prof. Hebra, but he thinks it is too little known and practiced.

Coffee in Delirium Tremens.—Before the Boston Society for Medical Improvement, as per report in the *Boston Medical and Surgical Journal* for June 28, the subject of delirium tremens was up for discussion. In the expressed opinions of members present, there seemed to be a lack of confidence in the remedial influence of opium. "Dr. Minot asked if any gentleman had tried strong coffee in the treatment of this disease? A former house-pupil at the Hospital, who had seen much of the disease, had great faith in its efficacy, as had also the nurse who took charge of the delirium tremens patients. It is given in the quantity of two quarts in twenty-four hours." * * * "Dr. C. E. Ware had given strong coffee to a patient in the Hospital lately with apparent good effects."

There are but few, if any, diseases in which a greater variety of remedies has been proposed than in delirium tremens. The present must be our occasion for suggesting a modification upon any of the plans of treatment we have ever seen proposed. We believe that *tartar-emetic* and *veratrum viride* possess powers to control the delirium, subdue the peculiar excitement, and thus indirectly dispose to sleep, that are scarcely to be found elsewhere, while in the combined action of *strychnine* and *quinine* we possess an influence admirably adapted to restore lost tone to the nervous system. In the former remedies we have a power to relieve local congestion and vascular excitement, and thus abate the delirium, while with the latter we can give tone and vigor to the cerebro-spinal centres.

Effect of Medicine upon the Teeth.—In our *Summary* for last month we referred to a paper by Dr. Abr. Robertson upon this subject. In

the *Dental Cosmos* for July the subject is continued. It is one of great interest, considering public prejudice; we have space only for a quotation or two. "Having now shown that *medicines*, judiciously exhibited and properly administered, do not, and generally cannot injure the teeth, and that many, if not most, *diseases* do, and of necessity must injure them more or less, I cannot refrain from adding that the *injudicious* exhibition and improper administration of medicines, and more especially the drenching themselves with quack nostrums, to which our people are so strongly prone, as uniformly do, and must, produce ill effects on these organs." * * * "Hence, a safe general rule in relation to quack nostrums is, that any time is an *improper time*, and any quantity is an *improper quantity;* and this is true of all stages of existence, from earliest youth to decrepit age. But medicines, when so administered as to secure the object for which they were given—the restoration of the secretions from an abnormal to their normal condition, the restoration of the body from disease to health—instead of injuring the teeth, protect them from injury."

REVIEWS AND BIBLIOGRAPHY.

The "Journal de la Physiologie."

Though late, we have received the ninth number of this Journal, for January, 1860; containing the usual amount of valuable physiological matter. It is now two years since the *Journal de la Physiologie* was started at Paris—long enough to test the question of its success and permanency. The Journal was commenced on a scale which demanded a considerable success in the way of subscription for its support. Each number contained from two hundred to two hundred and fifty pages; it has been elegantly printed, and apparently no expense has been spared in rendering its illustrations as perfect as possible. The great element of success, however, lay in the contributions it could command from the numerous eminent physiologists now working in Paris. In this respect the journal has surpassed the expectations of all who had formed any opinion on the subject on this side of the Atlantic. Take, for example, the last number, and we find in it original articles by Robin and Magitot, Chauveau, Balbiani, Ollier, Brown-Séquard, Gratiolet, Martin-Magron and Buisson, Rouget, Gubler; another article by Chauveau, and three more by the editor, Brown-Séquard. This constitutes the original department;

and of the names we have mentioned, six, at least, are known where the science of medicine exists. Comparing the original department of the number before us with that of the preceding, and even of the first number, where great efforts were undoubtedly made to obtain contributions, we find that it never has been as rich in material as it is at present. In addition to the articles we have mentioned, we have translations and extracts from other periodicals; proceedings of learned societies, and a summary of the progress of physiology in all nations, in which we may add the United States takes no insignificant position. Conducted and supported in this manner, the Journal is important to every physician, and indispensable to a physiologist.

The first article in the January number, on the development of the dental follicles, etc., by Robin and Magitot, is exceedingly elaborate, occupying fifty pages of the Journal. The subject is treated of too minutely to admit of an analysis at this time. Observations have been made upon the formation and development of the dental follicles in the fœtus of man, some of the mammalia, and some reptiles; and it is found that there is a remarkable uniformity in the development of these organs in the different animals examined; thus enabling observers to draw correct deductions from observation upon the lower animals. This article is to be continued in the following numbers of the journal. The second article, by Chauveau, is on some of the physiological effects of electricity on the animal organism. The next is upon the *rôle* of the generative organs in the multiplication by spontaneous division of certain kinds of infusoria. The reader of the *Buffalo Journal* will remember an article which appeared in the *Journal of Physiology* some months ago on sexual generation in infusoria, which was analyzed for that journal. This article is a continuation of the same subject.

Following this we have an article by Dr. Ollier upon the transplantation of bone. Dr. Ollier has lately been making some exceedingly interesting experiments upon the transplantation of the periosteum, which have already been noticed by us. Transplantation of bone has been occasionally attempted, but with no very satisfactory results. Ollier, however, as shown in this paper, has succeeded in a most marked manner. He divides his experiments into three groups:

1st. "Transplantation of bone taken from a living animal and placed in the midst of the tissues of an animal of the same species."

2nd. "Transplantation of bone taken from an animal dead for a

certain length of time, and placed in the midst of the tissues of an animal of the same species."

3rd. "Transplantation of bone taken from a living animal, and placed in the midst of the tissues of an animal of a different species."

The author's experiments upon these various points have been eminently successful. We give in the author's own words a *résumé* of the most important results of some of his experiments:

"In our experiments we have transplanted bones completely removed from the soft parts, enveloped simply in their periosteum. We have varied them in several respects, in order to appreciate the mechanism of the transplantation, and the different conditions of its success. We have seen, in the first place, that the periosteum played the principal part, and that its presence was indispensable to the success of the operation. It protects the vitality of the bone which it invests, and furnishes matter for its nutrition and growth; it continues, in a word, to perform the functions which usually devolve upon it." * * * * * * *

"We have transplanted bones ten minutes, thirty minutes, an hour and a quarter, after the cessation of the beats of the heart in the animal which furnishes them, and we have succeeded in making them regain their vitality, so that five months after the transplantation we have made an injection penetrate into the medullary canal."

We pass over an article on microcephalus, and the character of the human race, by Gratiolet; the comparative action of strychnine and curara, by Martin-Magron and Buisson; and the morphology of the locomotive apparatus of the vertebrata, by Rouget. We next have experimental researches on the physiology of the medulla oblongata, by Brown-Séquard. In this article the author reasons that the instantaneous stoppage of respiration, and consequent death, which follows upon the destruction of the medulla oblongata, is the consequence of irritation, and not the destruction of the nervous centre. Taking the phenomena which follow destruction of this centre in detail, he argues first, that the arrest of the heart's action is identical with the effect produced by galvanization of the pneumogastrics, by which the action of these nerves is exaggerated, not abolished; and that the medulla oblongata and cervical portion of the cord are often removed without this result. Second, that irritation of various parts of the cord produces that sudden arrest of the respiratory movements which so invariably follow injury of the medulla oblongata, so that the arrest of respiration, which commonly follows the removal of the medulla, may be the result of irritation of the neighboring parts of the

nervous system; and that the movements of respiration have been observed to continue in certain animals after removal of the medulla oblongata. Third, that the "agony" without convulsions, another acknowledged characteristic of death from injury to the medulla oblongata, is seen in cases of death from syncope, in cases where the movements of the heart are arrested by the galvanization of the pneumogastrics, etc., etc. These are but a few of the most important arguments brought forward by the author in support of his views.

We have another short article by Brown-Séquard, showing the independence of the vital properties of the motor nerves. In support of this he adduces the fact that the irritability of a motor nerve which has been entirely detached from its centre, will return after it has been completely exhausted by continued irritation. It is impossible, of course, that this return of its vital property should come from any other part of the nervous system. He also brings forward an experiment in which the vital properties of a nerve were brought back under the influence of blood charged with oxygen, when this nerve was completely isolated from the nervous centres; this was done by injecting the blood into the vessels of a limb of an animal, after the nervous irritability had entirely disappeared. At the end of ten minutes the vital properties of the nerve, as shown by muscular contraction following its irritation, were completely re-established. We have remaining, in the original department, another article by the editor on the influence of the nervous centres on nutrition, and a letter from M. Chauveau on the mechanism of the vascular "*bruits de souffle*," and the action of the auriculo-ventricular valves.

Our notice of the original articles contained in this number has been so extended, that we are compelled to omit the section devoted to translations, selections, etc.

An Address: delivered to the Graduates of the Long Island College Hospital. By AUSTIN FLINT, M.D. Brooklyn: 1860.

Any discourse of Dr. Flint, upon whatever topic, is always scholarly, evincing that nice sense of the proprieties of *Belle-lettreism*, which show him to be thoroughly conversant with literature beyond the strict limits of that of his own profession. The rules and spirit which should guide and animate the young practitioner in his endeavor for an honorable distinction in his profession, are very happily drawn and com-

mended in the present discourse. The terms with which he designates the *rear* of the profession have a mild and agreeable spiciness. He entitles this division of the profession as *monumental physicians.* We may thank him for the truth he so neatly enforces in the following paragraph:

"In the medical profession, as in other walks of life, not a few cannot, or will not appreciate the great fact of progress; and, hence, the profession abounds in members who may be distinguished by the title of *monumental physicians.* They represent not the present, but the past! They are living monuments of former stages of the career of science. They do not reflect science as it is, but perpetuate it as it has been. Remaining in a fixed position from the time when they entered the profession, they represent different periods of the past. A few are the living representatives of medicine as it was fifty years ago; some carry us backward a score of years, and others are only removed a single decade. While the progress of knowledge and art is onward, they are stationary, occupying always the same spot, with eyes reverted—'not remembering Lot's wife!' Our monumental brethren are not infrequently among those who decry the present system of medical instruction; finding fault with the schools for not adopting a higher standard of attainment for graduation. This is not the time and place for discussing the responsibility of professors for the admission into the profession of imperfectly educated graduates. But it is not inappropriate, in the present connection, to say that the subject of medical education has reference not to medical students only, but to practitioners of medicine. The want of progressive studies after graduation is, to say the least, as crying an evil as defective preparation for practice. Much as our schools fall short of what they might be made to be, it would be of immense advantage to the profession if practitioners, old as well as young, resorted to them much oftener than they do. As it is, our intelligent students contribute in no small measure to the improvement of the profession by reporting what they see and hear, and thereby inciting and directing the inquiries of those who stand to them in the relation of private teachers. In fact, it is not too much to say that the students and graduates from our schools go forth as missionaries to convert the stationary practitioners to faith in the new revelations of truth which are constantly taking place in the progress of medical knowledge! Let me express the hope, gentlemen, that of those whom I now address, none will ever be ranked among the *monumental physicians.* Begin your professional career with the conviction that constant progress

is the law of this as of other departments of knowledge not springing directly from Divine revelation; and with the determination always to be found among those who represent its actual condition."

The whole of this discourse is noticeable among those on similar topics for the absence of the *Academic strut*, which nauseates the philosophical appetite while overlooking them.

A Monograph upon Aconite: its Therapeutic and Physiological Effects, together with its Uses, and Accurate Statements derived from the Various Sources of Medical Literature. Translated from the German of Dr. Reil, Teacher of Medicine, and Physician at Halle. By Henry B. Millard, A.M., M.D. Prize Essay. New York: William Radde. 1860.

Monographic writings are valuable means of unfolding and portraying any given subject, and tend to improve and enrich our knowledge. Prolixity, which is repugnant to American taste and character, is, however, likely to attend such productions; much unimportant and valueless matter is associated with the good and profitable, yet, on the whole, we consider monographs as holding important places in the literature of medicine, and we wish they were more numerous.

We have just been perusing a monograph on *Aconite* from the pen of one Reil, a German, translated by Dr. Millard, of this city, and published by Radde—all *Hahnemanniacs.*

The treatise is very good in many respects, discussing the subject in its historical, physiological, and therapeutical relations. Upon analysis of the work, we find about one hundred and fifty different authorities quoted, upon whose experiments, opinions, &c., is deduced the *finale* of the book, under a chapter of "Conclusions." When we investigate still further, and find but about twenty-five of these one hundred and fifty authorities are homœopathists, we are a little put to our wits to find out how *homœopathic conclusions* can be drawn from such sources. It is true, conclusions might be deduced negatively, but in this monograph under consideration they are drawn positively; and this only increases our wonderment at the superstructure upon such a foundation, especially as the writer, when speaking of regular medicine, calls it "an almost forgotten old-womanish system."

In the course of our reading, we find the expressions "our remedy," and "our aconite," which would lead one to think aconite was a remedy peculiar to the Hahnemanniacal practice. How such assumption can be made is more than we can understand.

Aconite was introduced into the materia medica centuries ago, long before the diluting, triturating, attenuating, succussing, dynamizating, infinitesimalists started in their career.

Hundreds of pages portraying the individual and collateral experience of learned investigators declare to the world that aconite as a medicine found its birth-place in the manger of regular medicine.

We protest most earnestly against the assumption that aconite is a homœopathic remedy.

Who of all others has given to us the most reliable facts in reference to aconite? Fleming! Of sixteen monographs that have been published on aconite, how many are from infinitesimal pens? *Three!*

Of nine articles that have appeared on the subject in journals, how many are written by homœopathists? *Three!*

Six out of twenty-five authors have written about "our remedy," which makes it homœopathic, of course, and homœopathically it is so. If the number could be attenuated still more, and stood in about the proportion of aconite to its menstruum in its thirtieth dilution, then their right to call it a homœopathic remedy would be indisputable.

Setting aside its homœopathic connections, we think the book worthy the attention of all inquirers after information upon the subject, and would only say that we think its translator has erred in having the work issue from a source which at once stamps the volume with the impress of only infinitesimal value, and thus narrows its circulation.

JOB.

Transactions of the Medical Society of the State of New York for the Year 1860. Pp. 280.

This volume of the Transactions of the Medical Society of this State is not equal to some of its predecessors in bulk, and yet the meeting itself was a very interesting one. Perhaps the chief reason of this discrepancy between the things as done and the things as recorded, is, that much time was taken up by discussions, of which no record appears. It was a notable exception to the rule generally holding true of such societies, that the discussion of by-laws and rules of order took very little of the time of the meetings. The excellent management of the President, Prof. B. F. Barker, kept the Society from that waste of time which follows these common and exciting, but useless discussions. Some of the debates arising from the subject of the various papers were, to our thinking, very well worthy of preservation, and we hope that hereafter measures will be taken to preserve them.

As illustrative of our meaning, we can remind those who were present, that the interesting discussions which followed upon the presentation of the memorial of Queens County Medical Society; of the report of the Committee on Pharmaceutical Preparations; and of the resolutions concerning the pathological specimen of fracture of the neck of the femur, are not given in the proceedings. Yet these were all upon practical subjects of great importance, and the discussions were generally regarded as of great value by those present. But let us not be understood to blame the excellent Secretary of the Society. He has much to do, and he does it well. But what is needed is a shorthand reporter, who shall prepare his account of the proceedings for the Committee on Publication, and let them preserve what is valuable of it. Then would the absent members of the Society be in a manner benefited by the discussions, as well as by the papers read at the meeting.

The number of papers in this volume is thirty-four, and consist of voluntary communications, reports of committees, communications from county societies, and biographical sketches. One of the reports—that of the Committee on Pharmaceutical Preparations—has appeared in our pages. It is, by the way, an interesting fact, that the pharmaceutical report was not adopted, chiefly because it was *too favorable* to those preparations; a view that may surprise the manufacturers.

A careful perusal of the volume will repay any one who receives a copy. A certain number of them, by the way, are at the command of each Assemblyman and Senator.

The New American Cyclopædia: A Popular Dictionary of General Knowledge. Edited by George Ripley and Charles A. Dana. Volume X. *Jerusalem—Macferrin.* New York: D. Appleton & Co. 1860. Pp. 788. 8vo.

The depressing effects of the dog-days seem to have no power on the energy and perseverance of the editors and publishers of the Cyclopædia. With almost mathematical regularity, each volume makes its appearance at the promised time, and satisfies the subscribers, by the valuable material it contains, that they have done well in voting the book a prominent place among valued works of reference on their book-shelves. It combines so many good qualities, being a good manual of biography, geography, history, and science in general—a *multum in parvo*—that it is really a library in itself, from which the general student, the specialist, and the man of business may obtain that

information which is required almost daily in their several pursuits. Dry detail is avoided, and the articles present so attractive a form, that the student is tempted to take up a volume in his leisure moments, and read simply as a pastime.

The march of science and knowledge generally is so rapid that Cyclopædias in a few years become antiquated. It is pleasant to think that one of the most useful of these publications has been produced by the American press. Let us hope, when the time shall arrive for the appearance of a successor to this Cyclopædia, it may command a superintendence as liberal and thoroughly Encyclopædic as the publishers have been fortunate enough to obtain for the New American Cyclopædia. L. H. S.

Froriep's Notizen aus dem Gebiete der Natur, und Heilkunde, gesammelt und mitgetheilt von Dr. ROBERT FRORIEP, des rothen Adlerordens vierter Classe Ritter, Königl. Preuss. Geh. Medicinalrathe, A. D. und praktischem Arzte in Weimar, &c., &c. Druck und Verlag, von *Friedrich Mauke*, in Jena.

These *Notes of the Natural and Medical Sciences* are in the thirtieth year of publication. One hundred numbers are issued annually; subscription price, $8.00.

Each number consists of eight beautifully-printed quarto pages, double columns, of the choicest reading matter, arranged under the two separate heads of *Knowledge of Nature*, (Naturkunde,) and *Knowledge of Healing*, (Heilkunde.) Long extracts from new books, introduced by short critical and expository notices, and occasionally, also, important contributions, extracted from the journals, or directly communicated, form the principal articles of each division; while in each, under the sub-heading *Miscellanies*, additional news from the book or periodical press is presented in short, condensed abstracts. Finally, under the heading *Bibliographical News*, a list of the newest publications throughout the world, with full title-page, and generally the price, is given for each of the two departments.

From this indication of the contents, the reader cannot fail to see that every one able to read German who wants to "keep up with the times" in scientific knowledge, be he professional or layman, cannot do better than become a "constant reader" of *Froriep's Notizen*. Every new book that leaves the scientific press is here at once carefully and judiciously gleaned and represented by copious extracts; every important contribution to the scientific journals is condensed and submitted. To the physician, in view of the discoveries and practical im-

provements in medical science; to every man of education, in view of the progress of the science of sciences—that of "nature" in all its interesting and practical bearings—this publication proves the realization of his most sanguine and exacting expectations. Returning editorial courtesy, we can but wish that this monument of scientific erudition and zealous industry, founded by the worthy father, may long receive the well-continued labors of the present editor. L. E.

Archives for Clinical Surgery. By Dr. B. Langenbeck.

Among the latest surgical news from Germany, is that of the establishment by the illustrious Langenbeck, of Berlin, of the first journal devoted exclusively to surgery in Germany, a translation of the name of which heads this notice. It is edited, under Langenbeck, by Prof. Billroth, of Zurich, and Dr. Gurlt, of Berlin, and issued from the well-known press of August Hirschwald. The announcement of these four names is a sufficient guarantee of its worth. Its contents embrace—1, Monographs and essays on surgical subjects, based on clinical observation; 2, Delineation of new or improved methods of operating, carefully illustrated; 3, Description of new or improved surgical instruments, with the requisite illustrations; 4, Statistics of surgical diseases and operations; 5, Examinations in the department of History of Surgery; 6, Topographico-anatomical, pathologico-anatomical, and pathologico-chemical examinations, with direct reference to surgical subjects; 7, Operative surgical experiments on animals; 8, Experiments with external remedial agents; 9, Miscellaneous surgical information. It is also announced in the prospectus, that a yearly report on the "progress of surgical science and art" will be introduced in the *Archives.* Wishing in conclusion, on our part, the most ample success to this new periodical, and the circulation throughout the world to which its merits entitle it, we soon hope to be able to give our readers a taste of the cream of its well-supplied stores. L. E.

EDITORIAL AND MISCELLANEOUS.

— As a large proportion of the mortality of the human race occurs from one form of disease, it is proper that we should give more than ordinary attention to any suggestion in the way of therapeutics or prophylactics which promises success. The first article we give

in this number contains such a suggestion, which is not only advocated by forcible reasoning, but sustained by a number of facts as would lead us to place more reliance upon the efficacy of the treatment than upon many of the plans heretofore proposed. We invite, therefore, our readers to a careful perusal of this paper, and call upon them to further the object which is set forth in the foot-note upon the first page. It will be observed that the paper was read before one of the Sections at the last meeting of the Medical Association, and referred back to the author, to report further investigations at the next meeting. The author invites contributions upon the subject from his professional brethren throughout the country, so that he may be able next year to meet the wishes of the Association.

In order to command attention and merit confidence, all such investigations should be conducted upon the most scrupulous basis of a careful and scientific diagnosis. It is not enough to say that the patient had phthisis; all the rational and physical signs should be minutely noted, so that no carping critic could pick a flaw or question the validity of the diagnosis. The undoubted character of the disease once established, the action of the therapeutic agent should then be noted with the same care and the same exactness.

It is the want of this scientific exactness that occasions the rapid changes, in our estimation, of the value of many of the best articles in the Materia Medica, and the wide discrepancy in the opinions of writers.

Much has yet to be learned about the disease which constitutes the subject of this paper. Indeed, we might say that notwithstanding the numerous researches, but little comparatively is known. Its pathology has been written, but that pathology only proves the destruction of the individual. Spontaneous cures are recorded, but they have only shamed us into the acknowledgment that the ways of Nature are better than our ways, and that our best course is to imitate her. If we cannot begin at the beginning and trace the course of the disease to its fatal termination, we may proceed in the inverse order, and trace the action from its close to its incipiency.

The subject has been one which has especially attracted our attention, and the recent investigations in anatomy, physiology, and pathology have led us to view the disease as one essentially of the lymphatic system, primarily of the tissue, and, as a consequence, subsequently of the lymphatic glands, either locally or generally, extending secondarily, by means of the lymphatic vessels, throughout the whole economy. The views of Virchow, given in his Cellular Pathology; the anatomical researches of Papenheim, and the analogy of syphilis and other

infectious diseases, are confirmatory of the opinion here given. The chlorate of potass would, therefore, seem to be a not inappropriate remedy in the incipient stages of the disease; on the contrary, it appears to us as a most valuable agent for the elimination of the morbific principle, which may be at the very bottom of this evil. We have witnessed most striking effects from analogous remedies, such as the iodide of potassium, chloride of sodium, phosphate of lime, lime-water, &c.

We hope, therefore, that this subject will not receive the ordinary fate of similar calls, but that the plan of treatment proposed will be thoroughly tried by the profession, and the result of these trials faithfully reported to the author of the paper.

— The want of private hospitals where the sick can receive all the benefits of a well-regulated institution, without the unpleasant surroundings of a residence in a public hospital, has long been felt in New York. The recent extablishment of a *Maison de Santé*, which we briefly mentioned in our issue for June, has in part supplied this deficiency; and when we say in part, we mean that it constitutes but one of a number which should be organized. Scarcely a city in the Old World that does not possess several hospitals of this character. One or two cities in our own country have adopted them, and New Orleans especially, has always been noted for the number and excellence of its *Maisons de Santé*, which the traveling public have learned to appreciate. Until quite recently there have been no institutions of this kind in this city; here, where the floating population is so large, and the number of sick strangers proportionably great; where so many come for the professional attendance of our metropolitan physicians and surgeons. The inconvenience of hotel life to the invalid is notorious; the small, ill-ventilated rooms, the tardy attendance, and the disproportionate expense, is always a subject of universal remark. A *Maison de Santé* happily meets all these objections in its large, airy rooms, its regulated attendance, and its special appointments for the care of the sick.

The SANITARY HOME, under the immediate superintendence of Dr. Henry Schweig, is situated in Second Avenue, near Tenth Street, in one of the most salubrious parts of our city. Its arrangements, when thoroughly known, cannot fail to be appreciated by both the profession and the public: by the former, on account of the assurances they have that they can visit their own patients, knowing that they will receive the best of attendance, and the treatment directed by them rigidly pursued; by the latter, for the reason that they can employ what physician or surgeon they choose, in addition to having the best attendance the city can supply. We say this advisedly, for

we have visited the Sanitary Home, and have surveyed it in every department. As the result of this survey, we can confidently recommend it to the patronage of the profession.

— We call the attention of our readers to the circular of Dr. Gibbs, which appears in another part of our journal. If sufficient encouragement be given to justify the undertaking, he proposes to issue *A Year-Book of American Contributions to Medical Science and Literature.* Our readers are familiar with the *Summary* which Dr. Gibbs has, for the last year, prepared for the pages of the Monthly, and it would be, therefore, a work of supererogation for us to commend this undertaking to them.

Such a work as is proposed by Dr. Gibbs has long been needed. The medical literature of other countries have their abstracts, retrospects, annuals, and year-books, and we are gratified in knowing that in the pages of the Monthly this design originated, which we hope will receive the encouragement it richly deserves.

— With the October number we propose to commence a *Summary of Foreign Medical Literature*, which will give a brief abstract of the leading thoughts of writers in foreign countries. This portion of our journal will be under the supervision of a medical gentleman—Dr. L. Elsberg—who has already gained for himself a reputation in this department. The experience that Dr. Elsberg has had in preparing notes for other journals has eminently fitted him for the work.

Changes in Medical Journals.—The *New York Medical Press*, a weekly journal, whose advent we chronicled eighteen months ago, has no longer an existence. Its last number appeared with the last week of June, and its subscription list was transferred to the publishers of the new weekly, the first number of which appeared on the 7th of July, as was stated in our last issue.

Two years ago there were two medical journals published in Detroit; now there are none. The *Peninsular Medical Journal* and *The Independent* were united at that time, and, until recently, appeared under the title of *The Peninsular and Independent.* A recent issue of this latter announces that it is the last, and that it ceases to exist on account of a lack of pecuniary support. This journal was ably conducted, and we regret that the editors should have failed to receive from the profession of their State a just recognition of their services.

The *Belmont Medical Journal* has also closed its career. This journal, though comprising few pages, showed the true spirit of progress, and we are sorry to hear of its suspension. The reason assigned is a want of support.

THE AMERICAN
MEDICAL MONTHLY
AND
NEW YORK REVIEW.

OCTOBER, 1860.

ESSAYS, MONOGRAPHS, AND CASES.

Clinical Researches on the Action of Diuretic Remedies. By AUSTIN FLINT, M.D., Professor of Clinical Medicine and Medical Pathology in the New Orleans School of Medicine, and of Pathology and Practical Medicine in the Long Island College Hospital.

Various questions having direct bearings on medical practice, arise in connection with the employment of diuretics in different diseases. The uncertainty, as regards the diuretic effect, which belongs to this class of remedies, is well known. To some extent this is intelligible. We can understand why it is difficult to increase the secretion from the kidneys, when these organs are diseased; when, from obstruction of the portal vein in cirrhosis, medicines introduced into the stomach do not readily find their way into the general circulation; when, from obstructive cardiac lesions, the kidneys fail to receive a proper supply of arterial blood, and when the remedies used excite a cathartic action, or when there exists already an afflux of liquids towards the intestinal canal, causing diarrhœa. There are doubtless other circumstances, on the one hand favoring, and on the other hand interfering with, the operation of diuretics, which are not understood.

The *modus operandi* of diuretics must be considered as affording

room for various questions. Some of the remedies of this class are supposed to act by exciting directly the kidneys, when brought to these organs in the arterial blood; others are supposed to act indirectly, by affecting the circulation; and in other modes, it is highly probable that in certain cases the diuretic effect of remedies is due to changes in the blood, or of nutrition, by means of which excrementitious principles eliminated by the kidneys are produced in abundance. Acting in this indirect manner, remedies which are not embraced in the class of diuretics, in some instances, may have a more powerful diuretic effect than the most active remedies of that class.

Other questions relate to the kind of diuretic effect produced. To say that the quantity of urine is increased to a greater or less extent, does not express all that it is desirable to know respecting the operation of diuretics. How is the character of the urine affected, aside from the mere increase in quantity, is an important point of inquiry. A distinction has of late been made between diuretics which increase the quantity of urine mainly by augmenting the proportion of water, and those which increase at the same time the amount of solid constituents of the urine. The former have been called hydrogogue diuretics, and the latter depurative diuretics. This distinction, if just, is undoubtedly a very important one, for it is clear that to fulfill certain indications, as in the treatment of dropsy, the object is to eliminate water; while if it be aimed to expel through the kidneys morbid matter in the blood, the object is to increase the secretion of solids. The justness of this distinction appears to be sustained by the researches of Dr. Hammond on the operation of different diuretics when taken in health.*

The author of a late able work, however, expresses the belief that this distinction does not hold good in disease.† Here, then, is a question of importance. But we may push our inquiries further, and ask whether different diuretics may not increase the different principles in the urine, exclusive of the others. May not some increase the amount of urea, others the urates, others the phosphates, etc.? The importance of this question can be better appreciated when we have obtained facts which enable us to answer it.

The relative efficiency of different diuretics, the various circumstances to be considered in their selection in individual cases, the propriety of prescribing these remedies in cases of renal disease, etc., etc.,

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* *Vide* Am. Journ. Med. Sciences, Jan., 1859.

† Garrod on Gout and Rheumatic Gout. London, 1859.

are other questions pertaining to this subject, which must often suggest themselves to the mind of the medical practitioner.

With our present knowledge of physiology and pathology, we must look to clinical researches for the data by means of which we may hope to arrive at the answers to all these questions. The clinical study of the urine, properly directed and sufficiently extended, is adequate to this end. Something has been already attained, but vastly more remains to be accomplished. I shall offer in this article a slight contribution to this study. The points to which my researches were directed were simply to observe the quantity of urine and the amount of solid constituents under the use of certain diuretics in different cases of disease. The number of cases is only ten. Of these ten cases, in four the disease was *ascites* dependent on cirrhosis; in three, *albuminuria* dependent on *Bright's disease;* and in three, *subacute rheumatism.* These cases came under observation in the Louisville Marine Hospital, in 1852–3, and in 1855–6. Want of leisure has hitherto prevented me from tabulating the results of the examinations of the urine, and ascertaining the conclusions to which they lead.

In making the examinations, the urine passed during the twenty-four hours was preserved, and the specific gravity taken by the urinometer. The amount of solid ingredients was then calculated from the specific gravity and the number of fluid ounces, after the table given by Dr. Bird in his work on urinary deposits.* This method is not strictly accurate, but the results approximate to exactness sufficiently for the objects which I had in view. The difference of a few grains would not affect materially these objects, and, hence, in multiplying the number of fluid ounces contained in the quantity of urine passed in the twenty-four hours, by the amount of solids in a single ounce as determined by the specific gravity, I disregarded the fractions, because the additional labor which would be involved by including these would not be compensated for by the closer approximation to exactness. Had the object been to ascertain the quantity of each or any of the different principles which make up the solids of the urine, more elaborate and difficult processes of examination would have been required, and stricter accuracy important. As it was, the examinations made with reference merely to the quantity of urine and the amount of solids in these ten cases, required considerable pains and perseverance. On this account, I am reluctant to have what

* Page 77, American edition of 1859.

little value they may possess lost; but I wish to say that I attach more importance to them as indicating a direction in which clinical researches may be prosecuted with great advantage to practical medicine, than as embracing in themselves sufficient data for positive conclusions.

In presenting these researches, I shall give first a very condensed abstract of the history of each case; next, in a tabular form, the results of each examination of the urine as regards the date, the quantity of urine in the twenty-four hours, the specific gravity, and the amount of solids, in connection with the treatment; afterwards, appended to each case, a few remarks. Finally, under the head of *General Remarks*, I shall briefly review the facts which have been presented, and give the conclusions which are to be drawn from them.

CASE I. *Ascites—Fatal.*—Michael Davis, aged 30, laborer, Irishman, admitted into the Louisville Marine Hospital Oct. 21, 1852.

Enlargement of the abdomen occurred first, about nine weeks before his admission. Prior to this, for three months he had had much of the time intermittent fever. The abdominal enlargement disappeared in six weeks, and did not return till about two weeks before his admission. In the mean time, he was able to work, until up to about two weeks before his admission. The abdomen measured 41½ inches in circumference. The lower limbs were œdematous. Death occurred in January, 1854. On examination after death, the liver was found contracted and nodulated; the heart, lungs, spleen, and kidneys were healthy. The urine was at the time albuminous. Tapping was performed shortly before death.

October 26*th.*—The patient had been treated since his admission with hot-air baths once daily, continued for half an hour. They were attended by copious perspiration.

The whole quantity of urine passed in twenty-four hours was 12 oz.; sp. gr., 1030; the whole amount of solids being a fraction over 372 grs. The following table exhibits the treatment pursued during the months of October, November, and December, the quantity of urine passed in the twenty-four hours on the days when examinations were made, together with the amount of solids contained in the urine, and the circumference of the abdomen:

TREATMENT.	DATE.		Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids.	Size of Abdomen.
From Oct. 28th, the	Oct. 28		14 oz.	1026	378 grs.	37½ inches.
following liniment was	" 30		25 "	1027	700 "	37¾ "
rubbed daily over the abdomen and thighs:	" 31		24 "	1026	661½ "	37 "
of the tinct. of digita-	......		......	....	....	....
lis, squills and iodine	Nov. 2		36 "	1024	900 "	38 "
one part, and of the	" 3		23 "	1026	621 "	
comp. soap liniment two parts.	" 4	failed to get med.	32 "	1024	800 "	
Nov. 1. The exter-	" 5	" "	15 "	1028	435 "	36¾ "
nal use of diureticswas	" 6	" "	18 "	1022	396 "	36¾ "
discontinued, and the nitrate of potassa, half	" 7	got double quantity of medicine.	9 "	1027	252 "	36½ "
an ounce in a pint of water, directed daily.	" 8		30 "	1024	750 "	36½ "
The patient failed to	" 9		27 "	1024	675 "	36½ "
get medicine Nov. 4,	" 11		56 "	1024	1400 "	35¾ "
5, and 6; he got a double quantity on the 7th,	" 13		36 "	1028	1044 "	
and the quantity pre-	" 14		24 "	1025	424 "	36 "
scribed on the 8th, and	" 15		35 "	1024	885 "	36 "
subsequently till the	" 16		41 "	1024	1025 "	36 "
treatment was changed, Nov. 19th.	" 17		44 "	1021	924 "	36 "
	......		......	....	....	....
Nov. 19. Free purga-	Nov. 19		9 "	1030	279 "	34½ "
tion was produced by	" 20		11 "	1028	464 "	33 "
elaterium. and the nitrate of potassa sus-	" 21		11 "	1026	299 "	34½ "
pended.	" 22		16 "	1024	400 "	33½ "
Nov. 21 & 22. Moderate purgation was	" 23		16 "	1033	560 "	33½ "
produced by elateri-	......		......	....	....	....
um.	Nov. 24		34 "	1025	624 "	
Nov. 23. The citrate	" 25		19 "	1026	516 "	33½ "
of iron and quinia	" 26		23 "	1027	644 "	34½ "
were prescribed, and continued to the time	" 27		17½ "	1024	420 "	34 "
when the examina-	" 28		28 "	1020	560 "	
tions were discontinu-	" 29		27 "	1024	648 "	33½ "
ed, Dec. 9th.	" 30		30 "	1020	600 "	34½ "
	Dec. 1		21½ "	1022	472½ "	34 "
	" 2		24 "	1026	648 "	
Dec. 27. The patient was discharged, and	" 3		25 "	1023	575 "	
he attempted to work;	" 5		25½ "	1021	537½ "	35½ "
but was obliged to re-	" 6		17½ "	1026	472½ "	34½ "
turn in three days.	" 7		36 "	1028	1044 "	36 "
Examinations of the urine were not resum-	" 8		25 "	1026	675 "	35 "
ed.	" 9		28½ "	1028	827½ "	35 "

Remarks.—The examinations of the urine in the foregoing case were made on thirty-eight days. The minimum quantity of urine passed in the twenty-four hours was 9 ounces. This occurred on two occasions. One of these was on a day (Nov. 7—*vide* Table) when an ounce of the nitrate of potassa was taken; but for the three days previous the patient had taken no diuretic medicine, and the diuretic effect of the medicine taken on that day was not manifested until the day following, when the quantity of urine and solid constituents was trebled. The other occasion was when active purgation was pro-

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NOTE.—The dotted lines between the figures in each table denote a change in the treatment, as mentioned under the head of *Treatment.*

duced by elaterium. The next lowest quantity of urine was 11 oz. This occurred on two consecutive days, when the patient was purged with elaterium.

The amount of solid constituents in the urine varied on these two occasions, when the quantity of urine was the same. On the first occasion it was 464 grs.. and on the second 299 grs.

The next lowest quantity of urine was 12 oz., the amount of solids being 372 grs. This was when the patient was taking the hot-air baths, which produced copious perspiration.

The external use of the diuretics appears to have induced a decided diuretic effect; the quantity of urine being increased from 12 oz. to 14, 25, and 24 oz., (*vide* Oct. 28, 30, and 31,) and the amount of solids being also increased. That this effect, however, is only apparent, not real, is rendered probable by the fact that the quantity of urine and the amount of solid constituents were habitually as large after Nov. 23d, when all diuretic remedies were suspended. The appearance of a diuretic effect may be due to the fact that the secretory action of the kidneys, prior to the external use of the diuretics, had been diminished by the hot-air baths.

The nitrate of potassa, which was continued, excepting for three days, from Nov. 2d to 19th, manifestly produced a diuretic effect. The quantity given, with the exception of one day, was half an ounce, dissolved in a pint of water, during the twenty-four hours. The quantity of urine for the eleven days that this remedy was taken was greater than after Nov. 24th, when no diuretic remedies were prescribed. The difference, however, is not extremely great. The mean quantity for ten of these days (excluding the day on which a double dose was taken) is $35\frac{1}{5}$ oz. The mean quantity for ten days from Nov. 24, when the patient was taking the citrate of iron and quinia, is $24\frac{9}{10}$ oz. That a diuretic effect was produced, is strikingly shown by the examinations on four consecutive days, during three of which the remedy was suspended, (Nov. 4th, 5th, 6th.) On the first of these days the quantity was not diminished, probably in consequence of the effect of the remedy on the previous day not being exhausted. But on the second, third, and fourth days there was a considerable reduction. And on the day after the remedy was resumed the quantity was notably increased.

A comparison of the amount of solids with the quantity of urine, without going into mathematical calculations, shows a general correspondence between the two. When the quantity of urine was increased from the effect of the nitrate of potassa, the solid constituents

were augmented in about the same proportion. Taking the mean amount for the ten days when the diuretic effect of the remedy just named was manifest, and comparing with the mean amount during the ten days after the patient was placed on the citrate of iron and quinia, we have for the first of these periods a fraction over 864 grs.; and for the second, a fraction over 570 grs. The nitrate of potassa, therefore, as shown by this comparison, increased the amount of the solid constituents of the urine in not far from the proportion in which it increased the quantity of urine.

The effect of hydrogogue cathartics on the urine is shown in the foregoing table. Elaterium was given Nov. 19th, 20th, 21st, 22d. The quantity of urine fell from 44 oz. (which it was on the 17th) to 9 oz.; and for the two following days it was 11 oz. The mean quantity for these four days was $11\frac{3}{4}$ oz., and the mean amount of solid constituents $360\frac{1}{2}$ grs. Directly the elaterium was discontinued, the quantity of urine rose from 16 oz. to 34 oz.

The fluctuations from day to day in the quantity of urine and the amount of solid constituents were probably not greater than those which occur in health; and these, it will be observed, occurred during the time when the diuretic was given, as well as before and after this time.

As regards the effect of the diuretic on the size of the abdomen, it will be perceived that it was negative. The circumference of the abdomen, in fact, was less during the time that the patient was taking the citrate of iron and quinia than during the time that the nitrate of potassa was given. It was distinctly, but not greatly, lessened during the days when purging with elaterium was resorted to. The object of the treatment with the diuretic was to relieve the ascites. Not only was this object not effected, but it is probable that the increased amount of solids in the urine, caused by the diuretic, was a source of injury to the patient. The history of the case does not show evidence of improvement in any respect while the diuretic was given; but subsequently, when the patient had taken the citrate of iron and quinia for a month, the general improvement was such that the patient left the hospital and attempted to go to work. In short, this case affords no encouragement for the use of the nitrate of potassa in the treatment of ascites dependent on cirrhosis.

Case 2. *Albuminuria, (Bright's Disease)—Fatal.*—John Mooney, aged 35, Irishman, laborer, was admitted into the Louisville Marine Hospital October 24, 1854. He had anasarca, and the urine was highly albuminous. He also had intermittent fever, of the quotidian

type. The latter was arrested by the sulphate of quinia. October 28th, the air-bath was employed at night, causing profuse perspiration. November 1st, the air-bath was discontinued, and he had no medicinal treatment up to November 19th, when the iodide of potassium was prescribed, in doses of a fraction over three grains three times daily. This remedy was continued up to the day of his death, November 30. Vomiting and purging were prominent symptoms, and it is probable that the remedy was not always retained. The dying was by asthenia, and the kidneys were found after death to be affected with Bright's disease.

The following table exhibits the results of examinations of the urine on sixteen days during the last month of the patient's life:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Solid constituents in 24 hours.
The treatment from	Oct. 28	22 oz.	1015	330 grs.
October 28th to Nov.	" 29	22 "	1012	264 "
1st was the hot-air	......	......	....	......
bath. The patient was	Nov. 2	18 "	1008	134 "
also taking the sulphate	" 6	51 "	1012	512 "
of quinia.	" 8	36 "	1011	396 "
	" 9	23 "	1012	276 "
	" 10	25 "	1013	325 "
	" 11	30 "	1012	360 "
Nov. 19, the iodide	" 14	12 "	1014	252 "
of potassium was pre-	" 17	25 "	1010	250 "
scribed, in doses of a	......	......	....	......
fraction over three	" 19	20 "	1011	220 "
grains three times a	" 20	19 "	1028	551 "
day; this was continued	" 21	14 "	1013	182 "
until death.	" 22	23 "	1010	230 "
Death occurred Nov.	" 24	15 "	1014	210 "
30th.	" 25	6 "	1025	156 "

Remarks.—The examinations in this case, continued during the last month of life, show, with occasional fluctuations, a steady decline in the quantity of urine and the amount of solids. The low specific gravity, or the small proportion of solids to the quantity of the urine, is characteristic of the disease. The iodide of potassium produced no apparent diuretic effect. The mean quantity of urine from Nov. 2d to 17th inclusive—the patient during this time taking no medicine—is $23\frac{6}{8}$ oz.; from Nov. 19th to 25th inclusive, when the iodide of potassium was given, is $16\frac{1}{6}$ oz. The mean amount of solids for the first of these periods is $313\frac{1}{8}$ grs.; for the second period, $258\frac{1}{6}$ grs. The difference in the amount of solids between the two periods, thus, is not far from corresponding with the difference in the quantity of urine.

It is to be considered that the quantity of the iodide of potassium given daily was not large; and also, that, owing to frequent vomiting, it may frequently have been rejected. It is gratuitous to add, that the negative effect of this remedy in this case is not to be taken as any criterion of its operation in other forms of disease, or when the kidneys are not the seat of degenerative disease.

Case 3. *Subacute Rheumatism.*—Philip Hesse, aged 29, German, laborer, was admitted Nov. 11, 1853. He had been affected with subacute articular rheumatism for fourteen days. The ankles, toes, wrists, and finger-joints had been attacked. The wrists, ankles, and shoulders were tender and painful at the time of his admission. The ankles and wrists were swelled. There was no febrile movement. He was subject to intermittent fever. He progressively improved, and was discharged quite well Dec. 5, 1853. The treatment consisted exclusively of the administration of the acetate of potassa. The patient took of this remedy two drachms daily, in a pint of mucilaginous liquid, from Nov. 12 till Nov. 15, when the quantity of potash was increased to four drachms. Nov. 21st the potash was diminished to two drachms, and on the 26th it was discontinued. The following table shows the results of examinations of the urine from Nov. 12 to Dec. 2:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids in 24 hours.
Acetate of potassa	Nov .12	12 oz.	1032	396 grs.
ʒij. in Oj. of mucilagin-	" 14	30 "	1020	600 "
ous liquid was prescrib-	" 15	29 "	1020	580 "
ed Nov. 12. The first	" 16	30 "	1018	540 "
examination on the date	" 18	40 "	1018	720 "
just stated was prior to	" 19	34 "	1022	748 "
entering on the treat-	" 20	29 "	1021	509 "
ment.	" 21	25 "	1022	550 "
Nov. 15, the potash	" 23	29 "	1025	754 "
was increased to ʒiv. in	" 24	29 "	1024	696 "
the 24 hours.	" 25	17 "	1024	408 "
Nov. 21, the potash	" 26	30 "	1018	540 "
was diminished to ʒij.	" 27	29 "	1015	434 "
in the 24 hours.	" 28	29 "	1027	812 "
Nov. 26, the potash	" 29	36 "	1025	936 "
was discontinued, and	" 30	29 "	1028	848 "
no medicine afterwards.	Dec. 1	32 "	1024	768 "
Dec. 5, discharged,	" 2	29 "	1017	493 "
quite well.				

Remarks.—Taking the first examination in the foregoing case (made before the acetate of potash was prescribed) as a criterion of

the quantity of urine and the amount of solids prior to the administration of the diuretic remedy, the effect of the remedy was apparently immediate and considerable. The effect of an increased quantity of the remedy (November 15) appears to be also marked in the increased quantity of urine and amount of solids. November 18th and 19th, this effect seems to be farther shown by the lessened amount of solids; November 25th, 26th, and 27th, the acetate of potassa having been diminished from four to two drachms. But it is to be remarked, that after Nov. 26th, when the remedy was discontinued, the quantity of urine and the amount of solids were greater than before. The maximum amount of solids occurred during the time that no medicine was given; and the mean quantity of urine and amount of solids for the seven days on which examinations were made after the medicine was discontinued, are somewhat greater than for the preceding seven days. The amount of solids after the medicine was discontinued, it is to be noted, considerably exceeded the average amount of health, assuming the latter to be about 650 grs,; while the quantity of urine did not exceed the average quantity in health, viz., from 30 to 40 oz.

CASE 4. *Subacute Rheumatism.*—John Adams, aged 36, Mexican, laborer, admitted January 7, 1854. He had had repeatedly attacks of rheumatism. Fifteen days before his admission, he was attacked with subacute articular rheumatism, affecting, successively, various joints. When admitted, and afterwards, he was able to be up and about the ward. Several joints were tender and painful, without redness or swelling. He had mitral valvular lesions and enlargement of the heart. The acetate of potash was the only remedy prescribed. January 15th, he began with this remedy, and took four drachms in two pints of water during the twenty-four hours. January 16th, the quantity was reduced to two drachms in the twenty-four hours. This quantity was continued until his discharge, Jan. 24th, when he was free from rheumatic trouble, and complained only of dyspnœa on exercise, referable to the cardiac affection.

The following table shows the results of examinations of the urine Jan. 14, before commencing to take the potash, and subsequently, up to the date of his discharge:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids in 24 hours.
	Jan. 14	31 oz.	1027	868 grs.
Jan. 15. He took	......	......	....	......
four drachms of the	" 16	60 "	1013	780 "
acetate of potassa; af-	" 17	65 "	1016	1040 "
terwards he took two	" 18	63½ "	Not taken.	

drachms daily in a pint	Jan. 19	$72\frac{1}{2}$ oz.	1013	943 grs.
of water, up to the day	" 20	67 "	1013	871 "
of his discharge. The	" 21	65 "	1014	910 "
improvement was pro-	" 22	74 "	Not taken.	"
gressive.	" 23	76 "	1014	1067 "
	" 24	82 "	1014	1148 "

Remarks.—In this case, considering the quantity of urine and the amount of solids prior to commencing to give the acetate of potassa, as represented by the result of the examination Jan. 14th, an immediate, marked diuretic effect is apparent. The diuretic effect is farther shown by the quantity of urine and the amount of solids being greatly above the averages of health. The amount of solids is much larger than in health, but it will be seen that the quantity of urine is increased in a larger proportion. It would have been interesting in this case to have kept the patient under observation for some time after suspending the medicine, and continuing the daily examinations of the urine.

Case V. *Ascites.*—Michael Collins, aged 22, Irish, laborer, was in hospital when my service commenced, in October, 1855, having been admitted in the preceding May. When he entered, the abdomen was greatly enlarged with ascites. The dropsy was now much less, and œdema of the limbs (which had also existed) had disappeared. He had improved during his stay in the hospital, in all respects. The urine was not albuminous.

Oct. 3d.—The quantity of urine passed during the twenty-four hours was ascertained, and its specific gravity; the patient at this time taking no medicine. The nitrate of potassa was then prescribed, a drachm, largely diluted, to be given during the day. This treatment was continued to October 14th, and examinations of the urine made. On this date, the citrate of iron and quinia were prescribed.

Oct. 22.—He reported well enough to go to work, and he was discharged.

The following table shows the results of the examinations of the urine from the 3d to the 14th of October:

Treatment.	Date.	Quantity of Urine in the 24 hours.	Specific Gravity.	Amount of Solids in the 24 hours.
Oct. 3, no treatment.	Oct. 3	30 oz.	1024	720 grs.
	....	....	....	....
Oct. 4, the nitrate of	Oct. 6*	42 oz.	1022	924 grs.
potash, ʒj., largely	" 7	36 "	1024	864 "
diluted, in the 24	" 9	30 "	1024	720 "
hours. This con-	" 10	36 "	1024	864 "

* Abdomen measured 33 inches in circumference.

tinued till Oct. 14.	Oct. 11	30 oz.	1026	810 grs.
	" 12	31 "	1025	806 "
	" 14*	32 "	1025	832 "

Remarks.—In this case, the quantity of urine was slightly increased, while the patient was taking a drachm, daily, of the nitrate of potassa, but the quantity, one day only, (Oct. 6,) exceeded the limit of health. The amount of solids exceeded the healthy average before the remedy was given, but during the use of the remedy these were considerably increased. In case No. 4, the quantity of urine was increased out of proportion to the increase in the amount of solids, but in this case the effect was the reverse; the amount of solids was increased out of proportion to the quantity of urine, the latter (with the exception of a single day) being within the average quantity in health.

In this case, it is to be regretted that the examinations of the urine were not continued after the diuretic remedy was suspended.

CASE VI. *Subacute Rheumatism.*—Patrick Fogerty, aged 24, laborer, Irishman, was admitted October 15, 1855. He had had subacute rheumatism for four weeks. The two weeks preceding his admission he had kept the bed. He was now able to get up. The shoulder and ankle-joints had been chiefly affected. He had previously had the disease. There was no affection of the heart; he was subject to intermittent fever.

Oct. 17.—The urine was preserved and the specific gravity ascertained. Up to this time no treatment was pursued. On the 17th a drachm of the acetate of potassa, daily, largely diluted, was prescribed. This treatment was continued to the 23d of October. The acetate of potassa was then suspended, and twenty grains of the sulphate of quinia, daily, prescribed, with Dover's powder, *pro re nata.* Up to this date, there had been no improvement. The sulphate of quinia was given till Nov. 2d. The rheumatic affection continued, but was diminished. Nov. 2d, a fluid drachm of the wine of colchicum, three times daily, was prescribed. The colchicum acted freely on the bowels, without producing vomiting. The rheumatic affection was relieved. Nov. 6th, the colchicum was suspended, and half a grain of calomel, every two hours, prescribed. This was continued until slight ptyalism was induced. Dec. 9th, the patient was nearly free from the rheumatic affection. The date of discharge is not noted.

The following table shows the results of examinations before any treatment was adopted, and subsequently, while the patient was taking successively the acetate of potassa, the sulphate of quinia, and the

* Abdomen measured 30 inches in circumference.

wine of colchicum. The examinations were not continued after the colchicum was suspended, and mercurialization was resorted to.

Treatment.	Date.	Quantity of Urine in the 24 hours.	Specific Gravity.	Amount of Solids in the 24 hours.
Oct. 17, examination	Oct. 17	17 oz.	1030	527 grs.
prior to treatment.	....	....	....	....
On this day a	Oct. 18	22 oz.	1030	682 grs.
drachm of the ace-	" 19	41 "	1015	615 "
tate of potassa	" 20	26 "	1020	520 "
daily.	" 21	30 "	1025	806 "
Oct. 23, the acetate	" 22	28 "	1020	760 "
of potassa suspend-	....	....	....	....
ed, and S. quinia,	Oct. 24	35 oz.	1025	910 grs.
grs. xx., daily, sub-	" 25	41 "	1030	1271 "
stituted.	" 26	32 "	1025	832 "
Nov. 1, the quinia	" 27	46 "	1025	936 "
discontinued, and	" 28	40 "	1020	840 "
wine of colchicum,	" 29	42 "	1020	882 "
ʒj. three times, sub-	" 30	40 "	1020	840 "
stituted; the latter	" 31	40 "	1025	1000 "
acted freely as a	Nov. 1	32 "	1025	832 "
purgative. It was	....	....	....	....
discontinued on	Nov. 2	33 oz.	1030	1023 grs.
Nov. 6, and mercu-	" 3	34 "	1030	1054 "
rialization resorted	" 4	40 "	1025	1040 "
to; but the exam-	" 5	41 "	1025	1066 "
inations were not				
continued.				

Remarks.—On commencing the acetate of potassa in this case, the quantity of urine and the amount of solids were at once increased, but the mean quantity of urine for the five days that this remedy was given was below the lowest average of health, viz., $29\frac{3}{5}$ oz. The mean amount of solids for this period was slightly above the average of health, $676\frac{3}{5}$ grs.

The table shows the remarkable fact, that during the nine days that the patient was taking twenty grains of the sulphate of quinia, daily, the quantity of urine and the amount of solids were considerably greater than when he was taking the acetate of potassa. From this comparison, it would appear that the quinia in this instance was, of the two remedies, much the more powerful diuretic. Was this merely a coincidence? Comparative examinations in other cases are necessary in order to answer this question.

The examinations for four days while the patient was taking the wine of colchicum, show a still greater increase in the amount of solids, the amount being much above the healthy average.

It is to be remarked in connection with the increased amount of

solids, while the patient was taking the sulphate of quinia and the colchicum, that marked improvement took place. It is also worthy of note, that the colchicum produced free purging, acting apparently, at the same time, as a diuretic.

CASE VII. *Ascites—Fatal.*—Richard Gordon, aged 32, Irishman, laborer, of intemperate habits, admitted Oct. 23d, 1854. Had been subject to frequent attacks of intermittent fever. He first noticed enlargement of the abdomen six weeks before his admission. Œdema of the lower extremities followed; the abdomen had continued to enlarge; the urine was not albuminous; the abdomen was largely distended with liquid; he had taken elaterium and various diuretics prior to his admission.

Oct. 24th, he was purged freely with elaterium.

Oct. 25th, the following liniment was directed to be applied freely, with friction, twice daily, over the abdomen: of the tinctures of squill, digitalis, and iodine, each, one part, and of soap liniment, two parts. The ingestion of liquids to be restricted.

Oct. 26th, purging with elaterium was again resorted to, but the external application of the diuretic mixture was continued to Nov. 1. On this date he was tapped, and the nitrate of potassa, a drachm, daily, was prescribed. Between Nov. 1 and Dec. 8, he was tapped three times. Dec. 18th, he was again tapped, and again Dec. 31st, and Jan. 10th. He left the hospital Jan. 11th, 1856, and died Feb. 2d.

The following table shows the results of examinations while the external diuretics were employed, and subsequently, when the patient was taking the nitrate of potassa:

Treatment.	Date.	Quantity of Urine in the 24 hours.	Specific Gravity.	Amount of Solids in the 24 hours.
Oct. 24, elaterium was prescribed.	Oct. 25	6 oz.	1030	180 grs.
	....	....	....	....
Oct. 25, external application of diuretics commenced.	Oct. 26	4 oz.	1032	132 grs.
	" 27	7 "	1032	231 "
Nov. 1, tapped, and nitrate of potassa, a drachm daily, prescribed.	" 28	7 "	1030	217 "
	" 29	7 "	1030	217 "
	" 30	8 "	1032	264 "
The abdomen was rapidly filling at the time the examinations were discontinued, and he was subsequently tapped repeatedly.	....	....	....	....
	Nov. 1	16 oz.	1030	481 grs.
	" 2	16 "	1030	481 "
	" 4	18 "	1025	468 "

Remarks.—On the day after the purging with elaterium, (Oct. 25,) the quantity of urine and amount of solids were extremely small, probably having been diminished by the purgation. The quantity of the urine and amount of solids were greater, but still very much be-

low the healthy average, while the diuretic mixture was applied externally. There was a decided increase both in the quantity of urine and amount of solids when the nitrate of potassa was given directly after the first tapping; both, however, still falling considerably below the average of health.

This table illustrates the impeded function of the kidneys in cirrhosis.

Case VIII. *Albuminuria—Bright's Disease—Fatal.*—Michael McCran, of intemperate habits, aged 45, laborer, admitted Nov. 9, 1855. He had had intermittent fever much of the time for the two months preceding his admission. Œdema of the lower extremities occurred soon after being attacked with intermittent fever, and œdema of the face about the same time. When he entered, he was anasarcous, and there was liquid effusion in the chest and abdomen. The urine was highly albuminous. The heart was free from disease. Vomiting and diarrhœa had occurred frequently before his admission.

Nov. 13.—The external application of the diuretic mixture used in previous cases was directed, and the citrate of iron and quinia internally. This treatment was continued till Nov. 21. During this period, diarrhœa was a prominent symptom. The citrate of iron and quinia were given alone from Nov. 21st to 25th; Nov. 25th, a grain of digitalis and a grain of squill were prescribed, in combination, three times daily. Gin was also directed in lieu of porter, which he had previously taken, and an infusion of juniper.

Nov. 30.—The digitalis and squill were suspended, and elaterium was prescribed.

Dec. 1.—A drachm of the nitrate of potassa, three times daily, was prescribed, and continued for three days. It appeared to act as a cathartic, and the general dropsy was somewhat diminished; but the patient was extremely feeble. From Dec. 3d to 7th, no medicine was prescribed.

Dec. 7.—The external application of the diuretic mixture was again commenced, and continued till Dec. 11th. The diarrhœa persisted, and he vomited frequently.

Dec. 11.—The external use of the diuretics was discontinued, and the citrate of iron and quinia prescribed.

Dec. 21.—Gallic acid was substituted for the citrate of iron and quinia. Death occurred December 25th.

The kidneys were enlarged and granulated, probably from fatty degeneration. The liver was cirrhosed and contracted.

The following table shows the results of examinations during the varied treatment just detailed:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids in 24 hours.
Prior to Nov. 13th,	Nov. 12	20 oz.	1015	300 grs.
no remedy was given.	......	......	....	......
Nov. 13, external ap-	" 13	14 "	1015	210 "
plication of diuretics,	" 14	20 "	1015	300 "
and the citrate of iron	" 15	21 "	1020	420 "
and quinia internally.	" 16	19 "	1025	694 "
	" 17	26 "	1030	806 "
Nov. 21, external use	" 19	40 "	1030	1240 "
of diuretics, suspended	" 20	37 "	1030	1147 "
on account of their caus-	......	......	....	......
ing irritation of the skin;	" 21	22 "	1025	572 "
the citrate of iron and	" 22	28 "	1020	360 "
quinia continued.	" 23	26 "	1015	390 "
Nov. 26, a grain of	" 24	28 "	1015	260 "
digitalis and a grain of	" 25	25 "	1015	375 "
squill, three times daily,	......	......	....	......
with gin, and an infu-	" 26	15 "	1020	300 "
sion of juniper.	" 27	19 "	1020	380 "
	" 28	22 "	1020	440 "
Dec. 1, nitrate of po-	" 29	16 "	1020	320 "
tassa, ʒj three times dai-	" 30	10 "	1020	200 "
ly, for three days.	......	......	....	......
	Dec. 1	14 "	1020	280 "
From Dec. 3d to 7th,	" 2	17 "	1020	340 "
the citrate of iron and	" 3	16 "	1015	240 "
quinia.	......	......	....	......
	" 4	15 "	1015	225 "
Dec. 7, the external	" 5	14 "	1015	210 "
use of the diuretic mix-	" 6	16 "	1015	240 "
ture resumed.	......	......	....	......
	" 7	14 "	1020	280 "
Dec. 11, external use	" 8	13 "	1019	247 "
of diuretic mixture sus-	" 9	19 "	1018	343 "
pended, and the citrate	" 10	13½ "	1018	243 "
of iron and quinia given.	......	......	....	......
	" 11	10 "	1018	180 "
The examinations	" 12	8 "	1017	136 "
were not continued af-	" 13	12 "	1016	192 "
ter Dec. 17th.	" 14	11 "	1016	176 "
Death occurred, Dec.	" *16	35 "	1015	525 "
25th.	" 17	20 "	1015	210 "

Remarks.—The urine in this case, prior to entering upon any medicinal treatment, (Nov. 12,) was deficient in quantity and in solid ingredients; a condition belonging to Bright's disease. The external use of diuretics, in this instance, appears to have increased the quan-

* It is noted that the urine was suppressed on the 15th.

tity of urine, and still more, the amount of solids. The latter is to be remarked the more because the diuretics applied (digitalis, squill, and iodine,) are those which have been considered as increasing the quantity disproportionately to the increase of solids. The reverse seems to have been the effect in this instance. That this effect was real, not merely apparent, is rendered probable by the notable diminution in the amount of solids after Nov. 21, when the external use of the diuretics was suspended, and the patient was taking only the citrate of iron and quinia. Digitalis and squill, taken internally, in the dose of a grain of each, three times daily, produced no diuretic effect; the quantity of urine and the amount of solids being less than when the patient was taking the citrate of iron and quinia. The nitrate of potassa, given for three days also, did not operate as a diuretic. This may be owing to the remedy having acted as a cathartic. The external use of the diuretics, which was resumed on the 7th of December, produced little or no diuretic effect. From December 11th to 17th, it will be observed that, with the exception of a single day, (Dec. 16th,) the quantity of urine and amount of solids were extremely small. This was near the close of life, and the patient was taking only the citrate of iron and quinia. The unusual increase in quantity and solids on Dec. 16 is to be explained, perhaps, by the fact that there was no discharge of urine the day previous.

In looking over the table, the uniformity for successive days, repeatedly, as regards the specific gravity, while the quantity of urine varied, is to be remarked. This is the more remarkable when it is considered that the kidneys were greatly degenerated, and when it would have been anticipated that the fluctuations in the specific gravity would be greater than under other circumstances.

Case IX. *Albuminuria—Bright's Disease.* — Edward Kennan, Irishman, intemperate, laborer, aged 25, was admitted Nov. 27, 1855. He had been subject to frequent attacks of intermittent fever for five years. Œdema of the lower extremities had existed for eighteen months. He kept, however, at work until five weeks before his admission. When he entered he was moderately anasarcous; vision was impaired; the urine was albuminous; the heart was free from disease; he was able to be up and about the ward.

Nov. 28.—Digitalis and squill, of each one grain, in combination, three times, daily, were prescribed, and a pint of the infusion of juniper, to be taken during the twenty-four hours.

Dec. 7.—The patient's condition was much improved, except that the indistinctness of vision remained the same. The œdema had

greatly diminished. The digitalis and squill were now discontinued, and half an ounce of the nitrate of potassa, daily, substituted.

Dec. 11.—The œdema was nearly gone, and the general improvement was marked. The vision was the same. The nitrate of potassa was discontinued, and the citrate of iron and quinia prescribed.

The examinations were not continued after this date. The patient subsequently took gallic acid; he continued to improve; the vision became better; the œdema disappeared entirely; the urine, however, continued albuminous; his countenance was pallid.

He was discharged Jan. 25th, 1860. He had lost during his stay in hospital 33 lbs. in weight.

The following table shows the results of examinations up to Dec. 11, 1855:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids in 24 hours.
The examination Nov.	Nov. 28	48 oz.	1010	480 grs.
28th was prior to any	......	......	....	......
remedy being given; on	" 29	55 "	1010	550 "
this date was prescrib-	" 30	70 "	1010	700 "
ed digitalis and squill,	Dec. 1	56 "	1010	560 "
with infusion of juniper.	" 2	55 "	1010	550 "
	" 3	51 "	1010	510 "
	" 4	50 "	1010	500 "
	" 5	49 "	1010	490 "
	" 6	52 "	1010	520 "
	......	......	....	......
Dec. 7, half an ounce	" 7	56 "	1010	560 "
of the nitrate of potas-	" 8	57 "	1010	570 "
sa, daily, continued to	" 9	57 "	1010	570 "
the 17th. At this date	" 10	79 "	1012	948 "
the dropsy nearly gone,	" 11	83 "	1012	996 "
and subsequently no di-	" 12	86 "	1012	1032 "
uretics were given.	" 13	75 "	1010	750 "
	" 14	77 "	1010	770 "
Patient discharged	" 15	90 "	1010	900 "
free from dropsy, Jan.	" 16	97 "	1011	1067 "
25th.	" 17	80 "	1010	800 "

Remarks.—The examinations show in this case a marked diuretic effect of the digitalis, squill, and juniper. They show a much more marked effect from the nitrate of potassa, given in the dose of half an ounce, daily. The uniformity in the specific gravity in nearly all the examinations is truly remarkable. This shows an exact proportion in the increase of the solids to the increased quantity of urine. This fact, it will be observed, holds good alike when the diuretic remedy

consisted of digitalis, squill and juniper, and when the nitrate of potassa was prescribed.

So far as the dropsy was concerned, the diuretic treatment in this case was successful. The patient's condition in other respects was also much improved. The case illustrates the efficiency of diuretics in certain cases of albuminuria.

Case X. *Ascites.*—John Battersley, aged 43, Irishman, laborer, admitted Sept. 12, 1855. He presented, when my service commenced, (Oct. 1, 1855,) moderate ascites. No œdema. He was up and about the ward, complaining only of debility.

Oct. 5.—A drachm of the nitrate of potassa, largely diluted, three times daily, was prescribed. This was continued to Oct. 14th. The peritoneal effusion had then nearly disappeared. The nitrate of potassa was discontinued, and the citrate of iron and quinia prescribed. He progressively improved, and was discharged Nov. 11th, 1855, free from ascites.

The following table shows the examinations made while the patient was taking the nitrate of potassa:

Treatment.	Date.	Quantity of Urine in 24 hrs.	Specific Gravity.	Amount of Solids in 24 hours.
The examination Oct. 5 was prior to the remedy being given; on that date a drachm of the nitrate of potassa was given, three times daily; this was continued till Oct. 14th. The patient was discharged free from ascites, Nov. 11th.	Oct. 5	32 oz.	1020	640 grs.
	......	.....	....	......
	" 6	32 "	1021	672 "
	" 7	26 "	1024	624 "
	" 9	48 "	1020	960 "
	" 10	46 "	1016	736 "
	" 11	26 "	1020	520 "
	" 12	31 "	1025	806 "

Remarks.—The nitrate of potassa in this case produced apparently a distinct, but not very marked, diuretic effect. The increased amount of solids under the use of the remedy was greater than the increased quantity of urine.

The case illustrates the relief of moderate ascites under the use of a diuretic remedy.

General Remarks.—The series of examinations of the urine in the foregoing ten cases may be reviewed from two points of view: *first*, as regards the operation of the remedies, severally; and *second*, as regards the diseases. Directing attention in the first place to the diuretic remedies, we will consider each under a separate head.

Acetate of Potassa.—This remedy was given in three cases, all of which were cases of subacute rheumatism, viz., cases 3, 4, 5, and 6. In each of these cases, there was an immediate increase in the quantity

of urine and the amount of solids when the patient began to take the remedy. In one of the cases, (case 4,) the increase in quantity exceeded the increase of solids. In the other cases, the quantity and solids were increased about equally. In one case, (case 3,) the quantity and solids decreased when the remedy was given in smaller doses, but subsequently both the quantity and solids became greater when the remedy was discontinued. This shows that there may be a liability to error by imputing an augmentation of the urinary secretion, occurring spontaneously in the course of this disease, to the operation of a diuretic remedy. A series of examinations in a number of cases in which diuretics were not given, would be valuable, as showing to what extent changes occur irrespective of diuretics. In another case, (case 6,) although an immediate diuretic effect from the remedy was apparent, yet both the quantity of urine and the solids became still more increased after the remedy was suspended, and the patient was taking twenty grains of the sulphate of quinia daily. Whether the latter fact be owing to the quinia, or to changes occurring spontaneously in the course of the disease, we cannot say, without researches in other cases to aid in forming an opinion. In this case a drachm only of the acetate of potassa daily was given, and continued for five days, the quantity given in the other cases being two and four drachms daily. The actual amount of solids and quantity of urine in this case were but little above the average of health, while the patient was taking the acetate of potassa. In case 3 the increased quantity and solids did not greatly exceed the limit of healthy averages; but in case 4 the augmentation, both in quantity and solids, was great, the maximum of quantity being eighty-two fluid ounces, and of the amount of solids eleven hundred and forty-eight grains.

In conclusion, these cases afford evidence of the value of the acetate of potassa as a diuretic remedy given especially for the purpose of increasing the solid constituents of the urine.

Nitrate of Potassa.—This remedy was given in six cases, viz., cases 1, 5, 7, 8, 9, 10. In four of these cases the patients were affected with ascites dependent on cirrhosis; in two of the cases, the disease was albuminuria dependent on Bright's disease. In all of these cases, save one, there was an immediate increase of the quantity of urine and the amount of solids when the remedy was given. In the excepted case, (case 8,) the remedy was given on three days only, and it appeared to act as a cathartic. The disease in that case was albuminuria, and vomiting and purging were prominent symptoms. Moreover, the remedy was given but a short time before the fatal termina-

tion of the disease. The quantity of the salt given during the twenty-four hours, in the different cases, varied from one to four drachms. That the diuretic effect was real, as well as apparent, is shown in one case, (case 1,) by the decrease of the urinary secretion when the remedy was discontinued, and again an increase when the remedy was resumed. Of the cases of ascites, in all the diuretic effect was moderate. In case 7, the quantity of urine and the amount of solids, notwithstanding the diuretic effect, fell considerably short of the averages in health. In case 1, both the quantity and solids exceeded the healthy limit; the maximum of the former being fifty-six fluid ounces, and of the latter fourteen hundred grains. The same was true in cases 5 and 10, but to a less extent; the maximum of quantity in case 10 was forty-eight ounces, and of solids nine hundred and sixty grains; and in case 5 the maximum of quantity was forty-two ounces, and of solids nine hundred and twenty-four grains. As regards the relative increase of the quantity of urine and the amount of solids in two of the cases of ascites, the augmentation of each was not far from equal; and in the other two cases, the amount of solids was increased more than the quantity of the urine. In one of the two cases of albuminuria, the diuretic effect was very marked, (case 9.) The quantity and solids were increased equally, the specific gravity remaining with very little variation. The maximum of quantity in this case was ninety fluid ounces; and of the amount of solids, one thousand and sixty-seven grains.

These cases attest the value of the nitrate of potassa, especially as regards the augmentation of the solids in the urine.

Digitalis, Squill and Juniper.—These remedies were given in conjunction in two cases, viz., cases 8 and 9. In both, a grain of digitalis and squill was given three times daily; in one of the cases, a pint of the infusion of juniper was directed to be taken during the day; and in the other case, the quantity is not noted. In case 8, these remedies were continued for five days. No diuretic effect was produced. The quantity of urine and the amount of solids were less than subsequently, when the patient was taking only the citrate of iron and quinia. The same is true of the nitrate of potassa, which was substituted for the vegetable diuretics. The disease in this case was albuminuria, which proved fatal, and vomiting and purging were prominent symptoms.

I case 9, the remedies were continued for eight days. In this case a marked diuretic effect followed. The quantity of urine and the amount of solids were increased in exactly the same degree, showing

that in this instance these remedies did not act as hydragogue diuretics; in other words, increasing merely the elimination of water. The nitrate of potassa in this case, given subsequently, produced a much more marked diuretic effect, the quantity and solids preserving the same relative proportion. In this case the disease was also albuminuria, the patient becoming well enough to leave the hospital.

These cases are, of course, too few to warrant any important conclusions. The equal increase of the quantity of urine and the amount of solids, in case 9, is, however, a fact of importance.

Iodide of Potassium.—This remedy was given in one case only, a fatal case of albuminuria, (case 2.) The dose was a fraction over three grains, three times daily. It was given in the latter part of the disease, and continued to the time of death. Vomiting and purging were prominent symptoms. Examinations of the urine for six days showed no diuretic effect. The circumstances were extremely unfavorable for a diuretic effect from this or any other remedy; and, moreover, the quantity of the remedy given was small.

Wine of Colchicum.—In one of the cases of subacute rheumatism, (case 6,) a drachm of the wine of colchicum was given three times daily, for five days. It produced vomiting the first day, but not afterwards; but moderate purging continued during the time it was given. There was a marked increase in the amount of solids while the remedy was given, but the quantity of urine was not increased. This remedy was preceded by the sulphate of quinia, twenty grains daily, and by the acetate of potassa. The acetate of potassa increased the quantity and the solids of the urine, but both were still more increased while the patient was taking the quinia. The colchicum appeared to render the solids still more abundant, but there is room for the suspicion that this progressive increase may have been due to changes belonging to the course of the disease.

External Use of Diuretics.—In three cases, viz., cases 1, 7 and 8, a diuretic mixture was freely applied over the abdomen, with brisk friction continued for some time, once or twice daily. This was in imitation of a method proposed some years since by Prof. Christison. Prof. C., however, advised the continued application of diuretics to the surface by means of saturated cloths or the spongio piline. The application by means simply of an embrocation is doubtless less efficient, but I have known it to be followed by a marked diuretic effect. The mixture employed in all these cases was composed of the tinctures of digitalis, squill and iodine, of each one part, combined with two parts of soap liniment.

In case 1, a fatal case of ascites, the application was continued for three days, and a comparison with the quantity of urine and the amount of solids before this treatment was commenced, showed an apparent effect; but before commencing the treatment, the hot-air bath had been employed, and this probably had diminished the urinary secretion. The comparatively increased quantity of solids under the external use of the diuretics continued after this treatment was discontinued, and no diuretic given.

In case 7, there was an increase in the quantity and solids, when the diuretics were applied; but in this case, as in case 1, there was ground to suppose that the effect was more apparent than real, because, prior to entering on the treatment, the patient had been purged with elaterium. The treatment was continued for five days. The disease in this case was ascites, which proved fatal. Subsequently the quantity of urine and of solids increased under the internal use of the nitrate of potassa.

In case 8, a fatal case of albuminuria, the treatment was continued for seven days, and at a later stage resumed, and continued for four days. When first employed, the quantity of urine was somewhat increased, and the solids more than the quantity. That this effect was in reality due to the treatment, was shown by a decrease in the quantity and solids, when it was discontinued. When employed a second time, at a late period in the disease, no effect was produced.

On the whole, these few trials suffice to afford encouragement for resorting to the external use of diuretics in cases in which there are difficulties in the way of securing an effect from these remedies administered internally.

It remains to review the results of the examinations of the urine as regards the diseases. Directing attention to these, we will notice each disease under a distinct head.

Ascites Dependent on Cirrhosis.—Of the four cases of ascites, in two (cases 1 and 7) the disease proved fatal, and in two (cases 5 and 10) there was sufficient improvement for the patients to report themselves able to leave the hospital, and return to labor. In case 1 the quantity of urine rarely exceeded the limit of the healthy average, and generally fell below the average of health; the amount of the solid constituents, on the other hand, generally exceeded the healthy limit. To increase the solids in the urine is not a rational indication in the treatment of dropsy; and in this case the diuretics scarcely diminished the peritoneal effusion, nor was the condition of the patient improved by them. On the contrary, that they were hurtful is ren-

dered probable by the fact that the condition of the patient decidedly improved after these remedies were discontinued, and the citrate of iron and quinia substituted.

The patient, in fact, was sufficiently improved to wish to leave the hospital, and try to work, but he was compelled speedily to return. As I have said under the head of the remarks appended to this case, it affords no encouragement for the use of the nitrate of potassa in the treatment of ascites dependent on cirrhosis.

The case, however, shows that to a certain extent a diuretic effect, as regards the quantity and solids, may be induced by diuretics given internally, notwithstanding the difficulty in the way of the introduction of the remedies into the general circulation arising from the hepatic obstruction.

In the other fatal case, (case 7,) the external use of diuretics was accompanied by a decided increase of the quantity of urine and the amount of solids, and the nitrate of potassa occasioned a still greater increase; the quantity and solids, however, falling below the averages of health. No apparent influence was exerted on the progress of the disease; the rapid and great accumulation of effusion rendered tapping necessary at short intervals, and he left the hospital to die, having an apprehension of being examined after death if he died in the hospital. This case also proves that the existence of cirrhosis does not prevent the operation of diuretics to a limited extent, although, like case 1, it affords no encouragement to expect benefit from their use.

In case 5, the dropsy had already diminished considerably before coming under my observation. The nitrate of potassa increased but slightly the quantity of urine, but the amount of solids was considerably augmented. The patient improved during the ten days that this remedy was given, but he improved still more rapidly when taking the citrate of iron and quinia, which were continued till he left the hospital.

In case 10, the nitrate of potassa, given for nine days, produced a moderate increase of the quantity of urine, and a more marked augmentation of the solids. The ascites diminished under this treatment, but the progressive improvement was as marked, if not more so, during the following twenty-seven days, up to the date of his discharge, during which period the patient was taking the citrate of iron and quinia.

The results in these four cases do not seem to afford any evidence of the value of diuretics in the treatment of ascites dependent on

cirrhosis. They show that the quantity of urine may be moderately increased by these remedies in this disease, but that the solids are augmented out of proportion to the increase of quantity; and they render probable the conclusion to which theoretical considerations lead us, viz.: that the augmentation of the solids of the urine in this disease is more likely to injure than benefit the patient.

Albuminuria dependent on Bright's Disease.—Of the three cases following under this head, in two the disease proved fatal. In one of these, (case 2,) the iodide of potassium was the only diuretic remedy given. This produced no apparent effect. In the other fatal case, (case 8,) the external use of diuretics appeared to increase somewhat the quantity of urine, and still more the amount of solids. No apparent effect on the condition of the patient was observed. Subsequently, digitalis, squill and juniper produced no diuretic effect, and the same is true of the nitrate of potassa. In case 9, digitalis, squill and juniper, given internally, occasioned a marked increase in the quantity of urine, and an equal increase in the amount of solids. A still more marked effect on both the quantity and solids was occasioned by the nitrate of potassa. The patient's condition when taking these remedies progressively improved as regards the general dropsy, and in all other respects. These remedies were continued for nineteen days. The patient remained in hospital forty days after the diuretic treatment was discontinued. The dropsy did not return, and he continued progressively to improve until he felt able to leave the hospital; the urine, however, being albuminous at the time of his discharge. So far as a single case goes, this furnishes evidence that diuretics may be sometimes usefully employed in general dropsy dependent on Bright's disease.

Subacute Rheumatism.—Of the three cases, in all the acetate of potassa was the diuretic remedy employed, this being selected in consequence of its value being so highly extolled by Dr. Golding Bird. In case 3, the diuretic effect of the remedy was apparent in an increased quantity of urine and the amount of solids; but in this case, both the quantity and solids became still more increased after the remedy was discontinued, and no remedy was taken. The improvement while the patient was taking the diuretic remedy was marked. The acetate of potassa constituted the sole treatment in this case. The affection had existed for fourteen days before admission, and the patient was discharged quite well, after remaining in hospital twenty-four days.

In case 4, the quantity of urine and the amount of solids were greatly over the averages of health while the patient was taking the diuretic remedy. The remedy was continued for ten days. He was

in hospital seventeen days, and the affection had existed for fifteen days before his admission. The improvement in hospital was progressive, and he was free from rheumatism when discharged.

In case 6, the quantity of urine and the amount of solids were increased while the diuretic remedy was given, but the quantity of urine still fell below the average of health, and the amount of solids but slightly exceeded the healthy limit. In this case, both the quantity and solids were increased after the acetate of potassa was discontinued, and twenty grains of the sulphate of quinia given daily. But subsequently the wine of colchicum, given for five days, produced a marked increase in the amount of solids. The patient had been affected with rheumatism for four weeks before his admission. The rheumatic affection was relieved after the patient had been in hospital twenty days, the treatment during this period having consisted of the acetate of potassa for five days, the sulphate of quinia for eight days, and the wine of colchicum for five days. Mercurialization was afterwards resorted to, and fifty-four days after the date of his admission he was nearly free from rheumatism.

The rational indication to be fulfilled by diuretic remedies in rheumatism relates to the increase of the solids of the urine. These three cases appear to afford evidence of the efficient operation of the acetate of potassa in this regard. They also render highly probable the conclusion that this effect exerted a favorable influence on the disease.

In concluding this paper, I would repeat that I claim for the researches which it embraces, importance only as a small contribution to the study of the effects of diuretic remedies, and as indicating a direction in which clinical observation may be prosecuted with the expectation of reaching conclusions which will be highly useful in their bearings on practical medicine. A large number of recorded histories of cases of different diseases, under different measures of treatment, including daily examinations of the urine as regards not only quantity and specific gravity, but the different substances which make up its solid constituents, would afford materials for analytical investigation which could hardly fail to lead to valuable conclusions. To pursue this plan of study sufficiently to accumulate a large stock of cases, would require much patience and perseverance, in addition to the other qualifications for clinical observation. The plan could be successfully carried out only in a large hospital where all the necessary facilities are afforded, and by observers who, aside from competency for the task, are able to devote to it a large portion of their time for a series

of months or years. Should this paper chance to enlist in behalf of such an undertaking the interest of any one or more zealous young physicians who lack only the proper field of study, I will engage that this obstacle shall be removed.

GRAMERCY PARK HOUSE, *August* 24, 1860.

Lectures on Displacements of the Uterus. By E. R. PEASLEE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in the New York Medical College.

LECTURE VII.

GENTLEMEN—I to-day speak of the anterior displacements of the uterus—anteversion and anteflexion.

The existence of anteversion was first verified by Levret, but not till after the death of his patient. Mistaking the projection into the bladder of the fundus uteri displaced against its posterior wall, for a vesical calculus, he performed the operation of lithotomy; when, to his astonishment, no stone was found in the bladder. The patient died in consequence of the operation, and the *post-mortem* examination revealed an anteversion of the womb.

Retroflexion was not recognized as distinct from retroversion for many years afterwards; and even now by some writers the word retroversion is made to include both displacements. The distinction is not so indispensable in a practical point of view, as we have shown that between retroversion and retroflexion to be; but it should nevertheless be constantly kept in view. They are not any more than the posterior displacements, merely different degrees of the same thing; and anteversion, like retroversion, most frequently follows parturition, either premature or otherwise; while anteflexion is, and even more than retroflexion, most frequently independent of it.

1. In *anteflexion* the body only of the uterus falls forward, the cervix still preserving its normal position in the pelvis; the point of flexion being almost always at the junction of the body with the neck, (Fig. 9,) for reasons specified in Lecture V., page 19.

2. In *anteversion* the whole uterus is displaced forward, but without any flexure of the body upon the neck; so that it comes to assume an antero-posterior position in the pelvis, the fundus pointing forward, (Fig. 10.)

But the distinction between the two displacements is so similar to

that between the two posterior displacements, (Lect. V., pp. 20, 21,) that I need not dwell upon them here.

Since the body of the uterus naturally inclines in front of a vertical line touching the posterior surface of the cervix, (Fig. 1, Lect. I., p. 166,) we need recognize but two degrees of each of these displacements. In the *first* degree of each the body of the uterus falls for-

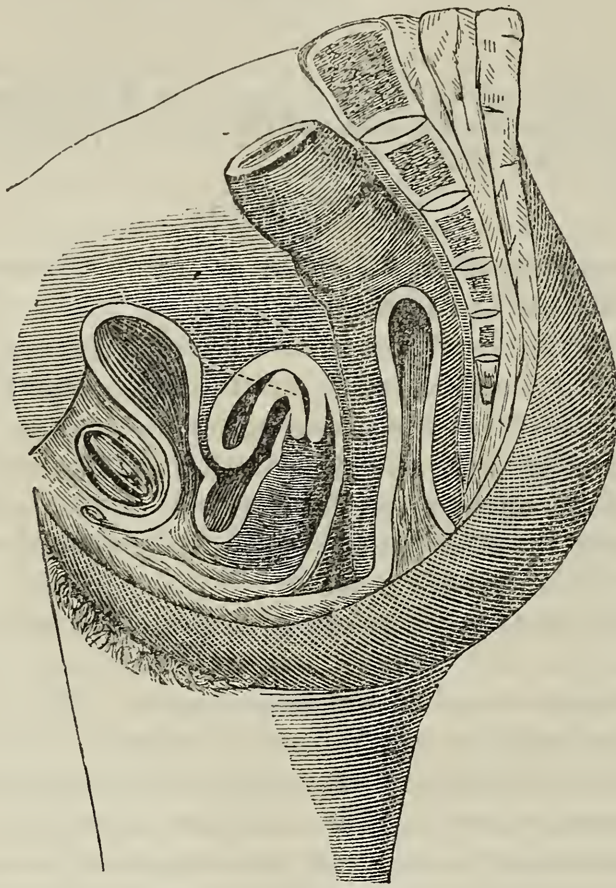

Fig. 9.

Anteflexion.—The womb is seen in the state of complete anteflexion—the second degree, or complete anterior reduplication; it falling into a cavity between the anterior wall of the vagina and the posterior wall of the bladder. The dotted lines show the position of the body of the uterus in the first degree of anteflexion. Neither the uterus itself, nor the dotted lines, are placed sufficiently low; and the rectum being represented as distended, the position of the first degree of anteflexion appears too nearly coincident with the normal position of the uterus. Generally, in anteflexion, the uterus is inclined to one side, and the bladder to the other.

ward upon the posterior wall of the bladder, (if somewhat distended,) so that its axis prolonged would fall below the middle point between the umbilicus and the symphysis pubis. In case of *anteflexion*, this would cause a bend of the body upon the cervix at about a right angle. In the *second* degree of both, the fundus points towards the symphysis pubis. In *anteversion*, it crowds the posterior wall of the bladder forward into its cavity; while in *anteflexion*, it falls down be-

tween the anterior wall of the vagina and the neck of the bladder, (after stretching the areolar tissue connecting them,) and thus a complete reduplication of the uterus anteriorly ensues.

The dotted lines in the accompanying figures represent the first degree of each. In *retroversion*, the neck of the uterus is also displaced backward, looking, in the second degree, towards the hollow of the sacrum; while it is not displaced at all in anteflexion.

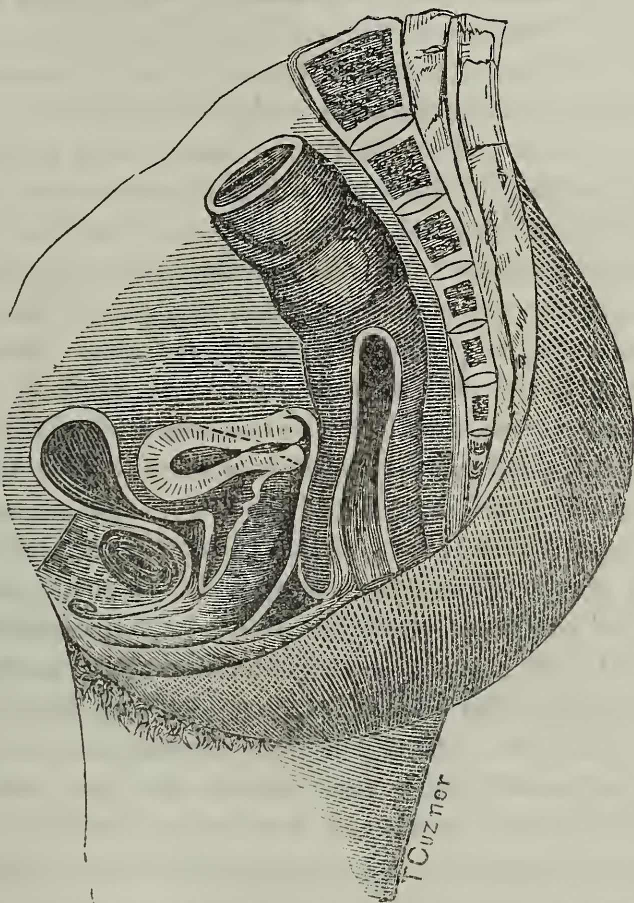

FIG. 10.

Anteversion, showing the first and second degrees. The uterus should be represented as falling down completely in contact with the bladder and the posterior wall of the vagina. Dotted lines as in preceding figure.

We must, however, admit, as in case of the displacements backward, every possible grade of malposition between the first degree of anteversion and complete anterior reduplication. We also very often find some degrees of prolapsus accompanying anteversion, and, rarely, anteflexion also.

If we inquire into the relative frequency of the anterior and posterior displacements, I should say, that in my observation, the latter

are the more numerous. In those who have not borne children, I have, however, found anteflexion rather more frequently than retroflexion, though Dr. Meigs speaks of the former as very seldom occurring. Both anteversion and retroversion are rare in this class of patients. As occurring after parturition, (premature or otherwise,) anteversion is more common than retroversion or anteflexion; but perhaps not more common than retroflexion.* And I think the reason of this may be found in the anatomical relations of the uterus. A cause acting to displace the uterus *backward*, will, the parts being in the normal state, be more likely to produce a flexion than a version, because the anterior wall of the vagina being firmly connected with the bladder, the body of the womb will bend on the neck before the vagina will become elongated and the os elevated anteriorly, (Fig. 6,) to constitute retroversion. Thus retroflexion will be far more common than retroversion in the natural state of the parts. On the other hand, a force acting to produce *anterior* displacements in the natural state of the parts will also be somewhat more likely to produce a flexion than a version; though, if the posterior wall of the vagina becomes elongated, (and it is far more likely to do so than the anterior in the opposite circumstances, since it is longer, and more easily distended,) anteversion will occur. Anteflexion is, therefore, on the whole, more common than anteversion, while the parts concerned are in their normal condition. But in the relaxed and distensible condition of the vaginal walls ensuing after parturition or miscarriage, either wall may yield, and thus either of the versions may ensue; but since the body of the uterus naturally inclines forward, and the posterior wall of the vagina still yields more readily than the anterior, anteversion more frequently occurs as a sequel of parturition.

Valleix found that of 68 displacements 35 were anterior, (24 of anteversion and 11 of anteflexion;) and 33 were posterior, (12 of retroflexion and 21 of retroversion.) Thus the cases of anteversion were the most numerous, of retroversion next, and those of retroflexion and anteflexion about equal, (12 and 11,) and about one-half as numerous as the two versions.

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* Dr. Meigs, however, up to the time of his publication of Colombat's work, had seen but a single case of anteversion. He has met with several since, (p. 240,) though in more than thirty years he has had but few opportunities of observing it, (p. 234.) He merely alludes to the flexions of the uterus as very rare and unimportant, (p. 238–40.) Mad. Boivin remarks, that these affections (the flexions) are "very rare, and consequently misunderstood," (p. 106.) It would, I think, be more correct to say they are misunderstood, and therefore assumed to be very rare.

Dr. Peebles regards anteversion as a very rare disease, when compared with retroversion. Dubois, on the other hand, thinks anteflexion to be more frequent than retroflexion, as my own observation would decide. M. Boulard has made some interesting observations bearing on the question of the frequency of this malposition. He finds that in the fœtus the uterus is almost always anteflexed; and of 27 adult females who had never borne children, 13 girls from 2 to 13 years old, and 17 full-timed fœtuses, *a majority had anteflexion.* Churchill admits that anteflexion may occur in the non-pregnant state; but he believes such cases to be very rare. During the first three months of pregnancy, anterior displacement of the uterus is so very common that we may almost regard the first degree of anteflexion as the normal position of the uterus at this time. And it often passes into the second degree. Anteversion may also exist during this period, and except in the first pregnancy, it is scarcely less common than anteflexion. Either of these malpositions is, however, rectified as pregnancy advances; and the symptoms it had produced (irritation of the bladder being usually the most troublesome) are thus spontaneously removed. While, therefore, the posterior displacements during pregnancy are of very great, those now under consideration are of comparatively slight, practical importance, (Lect. VI., pp. 127–32.)

The *mechanism* of the anterior displacements is easily understood. In case of *anteflexion,* we have only to assume the action of a force from above downward and forward sufficient to overcome the action of the broad ligaments, (Lect. I., p. 166,) and the natural rigidity of the cervix uteri at its junction with the body of that organ; while in *anteversion* the broad ligaments give way in the same manner, and the posterior wall of the vagina is at the same time elongated upward and backward. And when we remember the natural inclination of the uterus forward, we may well be surprised that these displacements are not more common than they are actually found to be. The round ligaments and the utero-rectal are not necessarily implicated in the anterior displacements; though in cases of long standing both will become contracted, and thus resist attempts to replace the womb, and for a time cause the womb to relapse into its previous position on being replaced. Dr. Meigs discovers in the mechanism of the anterior displacements only a shortening of the round ligaments, which pulls the uterus forward. Churchill states that so long as the bladder contains much urine, this accident (anterior displacement, and especially anteversion,) "may be considered impossible." If this were the fact, we could hardly account for a permanent anterior displacement ever

occurring at all; since in most persons the bladder is moderately distended the greater part of the time. He overlooks the fact that the bladder in these cases is usually inclined to one side of the middle line, and the displaced uterus to the other; and Dr. Meigs has, I think, assumed as a cause what is, in the great majority of instances, merely a sequel of the displacement.

Causes of the Anterior Displacements.—The *direct* causes of anteflexion and anteversion include all agencies which carry the body of the uterus forward and downward, and may be either uterine or extra-uterine. (1.) The former are congestion or inflammation of the body of the uterus, (or of the anterior wall alone;) a fibrous tumor, in the latter, or in the posterior wall, if large enough to crowd the whole uterus forward; polypus uteri, and hypertrophy from previous inflammation, or from arrested involution after parturition and early pregnancy, as before explained. (2.) The extra-uterine are pelvic tumors, ovarian or otherwise, crowding the uterus forward, and an habitually loaded and distended condition of the sigmoid flexure of the colon, producing the same effect. An obstinate diarrhœa has been known to produce it. So also have violent efforts, as in vomiting, difficult defecation, laughing, coughing, and riding in an uneasy carriage. A blow on the abdomen, a fall, or rising too soon after parturition, may also produce an anterior displacement at once.

Dr. Meigs admits the agency of some of the preceding causes, but proceeds to remark: "It is still clear to me that a contraction of the *ligamenta rotunda* is much more generally the cause of an anteversion." (p. 235.)* From this doctrine I have already expressed my dissent. We must, however, admit that a shortening of the round ligaments as a sequel to inflammation implicating them, of the appendages of the uterus or of the contiguous peritoneum, may gradually occur. And *if* such a change occurs, anterior displacement must of course result. So, also, adhesions of the cervix uteri to the posterior wall of the vagina may cause anteversion, as in a case communicated by Mad. Legrand. But all such should be regarded, I should say, as exceptional cases.

The *predisposing* causes are relaxation of the broad ligaments, or increased weight of the uterus, from any cause, and especially from parturition, (premature or at full term,) or in connection with menstruation. Certain occupations, also, predispose to anterior displacements. I have found sewing-girls to be peculiarly liable to anteflexion.

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* See also further on, p. 274.

Certain natural predisposing influences should also be added; as a long, much curved, and strong vagina, and a high and deeply curved sacrum. The convolutions of the small intestine normally surround the uterus, and support it equally on all sides; but if it lies high, it will, with its natural inclination forward, be more liable to have a greater mass of intestines behind it, and when the bladder is empty, the womb readily yields to this pressure. Thus the fundus curves forward, while the os points backward into the deeply excavated sacrum, and anteversion is effected. Both the anterior displacements are usually produced gradually; and when once an undue inclination forward is given to the fundus, a slight agency constantly acting will in time complete the malposition.

Symptoms of the Anterior Displacements.—Either anteversion or anteflexion in the first degree, or if gradually induced, may exist without any local symptoms; though many of the general symptoms mentioned in Lect. III. (p. 427–9) may be produced, and especially those affecting the digestive and the nervous system. Very much depends here, as in the other displacements, upon the temperament of the patient. But, as a general rule, the local symptoms of anteversion are more decided than those of anteflexion; there being more displacement of the appendages and surroundings of the womb, and more pressure upon them, in the former than in the latter. Still, the symptoms of neither are distinctive, but are those mentioned as common to several uterine ailments, in Lect. I., (p. 168.)

Anteversion is also more likely to be induced suddenly than anteflexion, as the former implies a more relaxed and readily yielding state of the parts concerned; and herein is another reason for the greater severity of its symptoms. Anteflexion, however, when produced by a violent effort, may be attended by equally severe symptoms, and only an internal examination can distinguish them.

Of *anteversion* in the second degree, the most common symptoms are the following: Vesical tenesmus and frequent micturition; perhaps, also, rectal tenesmus, and especially during the catamenial period; a bearing-down sensation; pain in the lumbar and inguinal region, and down the limbs; sometimes a feeling of weight in the rectum, from direct pressure against it of the cervix; and constipation from torpor of the muscular coat of the alimentary canal. All these unpleasant sensations are increased during the menstrual period, and by standing and walking; and diminished while in a recumbent position. Generally leucorrhœa also exists, and menstruation is abnormal.

The symptoms of *anteflexion* in the second degree are usually less pro-

nounced; it usually having been gradually produced, and having existed a long time before being detected. In almost all cases, however, we find sterility, dysmenorrhœa, and ovarian irritation. Dysmenorrhœa is due primarily to the partial closure of the canal of the cervix at the point of flexion. Ovarian irritation depends usually on the congestion (or inflammation) resulting from the displacement of one or both ovaries, in connection with that of the uterus; but this also becomes an additional cause of dysmenorrhœa.

Sterility also is often the result of anteversion, but not so generally as of anteflexion, as might be supposed.

The *physical* signs of anterior displacements are alone conclusive, as is the case with the posterior.

The *first degree* of anteversion or anteflexion may afford no symptoms, and may therefore, in most cases, escape detection. In the former, however, there will be found a backward displacement of the cervix on making a vaginal examination; but the sound alone will generally give evidence of the latter.

In the *second* degree of *anteversion* a vaginal examination shows that the uterus lies horizontally in the pelvis, the os pointing back towards the rectum, and the fundus forward against the neck of the bladder; consequently the curve of the vagina is changed, its upper extremity extending too far backward. Often the finger may trace the whole length of the uterus on its anterior (now its inferior) surface. Frequently the os uteri is carried so high posteriorly as with difficulty to be reached by the finger; but the sound is very seldom required to verify complete anteversion.

In the *second* degree of *anteflexion*, or complete anterior reduplication, the os and cervix are found in the normal position in the vagina, though the upper extremity of the latter is often carried a little backward, while the fundus is felt as a firm, rather tender, rounded tumor, lying between the anterior wall of the vagina and the bladder. Sometimes, however, the fundus is quite insensible to pressure, and thus might easily be mistaken for a fibrous tumor in the anterior wall of the uterus; besides, since only the anterior wall of the vagina intervenes between the cervix and the fundus, the latter may at first seem to be structurally continuous with the latter, and thus further confirm the suspicion of a fibrous tumor.

Per rectum, the os uteri may be felt projecting backward in the second degree of anteversion; but no positive knowledge is acquired in this way in case of anteflexion.

But if any doubt remain, the *uterine sound* decides the diagnosis.

In using this instrument, in case of *anteflexion,* we introduce it with the concavity upward, as if the uterus were in the normal position, the patient lying on the back, as directed in Lect. V., (p. 26;) and when the bulb is arrested on reaching the point of flexion, the handle is depressed, and thus the instrument passes into the proper cavity of the organ. The process by which the body of the uterus is then elevated to its normal position, of course needs no explanation. The same manipulations may be required to pass the sound into the uterine cavity, as those specified in connection with retroflexion, (Lect. V., p. 26,) and the tumor will of course no longer be felt after the sound is introduced.

Anteversion or anteflexion occurring in early pregnancy often presents no special symptoms, aside from the accompanying signs of pregnancy. Generally, however, there is some suffering from pressure upon the bladder. The diagnosis is here, of course, to be made out without the use of the sound.

Diagnosis of Anteflexion and Anteversion.—Anteflexion of the unimpregnated womb is distinguishable from the following conditions, as follows: anteversion is not so likely to be mistaken for other conditions, since the position of the os uteri at once suggests it.

1. From *fibrous tumor in or inflammations of the anterior wall of the uterus.*—The fundus uteri is usually tender, tumors usually not so; but the sound decides in both cases. This localized inflammation, however, but rarely occurs.

2. From *early pregnancy.*—All the signs of pregnancy are wanting; therefore the sound being used, decides. If there be doubt as to pregnancy, wait; at any rate, do not use the sound.

3. From *post-partum hypertrophy.*—Sound shows the uterus is *in situ,* but enlarged, and its cavity elongated.

4. From *carcinoma of the uterus.*—Carcinoma almost always invades the cervix uteri first; but use the sound.

5. From an *ovarian* (or other pelvic) *tumor.*—The sound isolates the uterus from the tumor.

6. From *extra-uterine pregnancy.*—Here again the sound isolates the uterus, if in its normal position, from the extra-uterine mass.

7. The anteflexed uterus sometimes inclines to one side, and may be mistaken for a *displaced ovary.* The sound decides.

8. *Anteversion* has been mistaken for *calculus in the bladder* by Levret and others; but the fundus uteri felt by the sound in the *bladder* is not so solid as a calculus, (unless encysted,) and does not give the peculiar sound on being struck; but the uterine sound decides.

9. Lastly, *Anteflexion* is distinguished from *anteversion*, with which it has so generally been confounded, by the difference in position of the cervix, as explained on page 274.

Effects and Complications of Anteflexion and Anteversion.—Congestion of the anterior wall, and sometimes of the entire uterus, is a very constant effect of the anterior displacements. Ovarian irritation also exists, and dysmenorrhœa, especially with anteflexion. Sterility also is more frequently associated with the latter; but not seldom with anteversion also, though not a necessary effect of either. Sexual desire is also diminished in both, but perhaps more decidedly in cases of flexion. Atrophy of the cervix at the point and on the side of flexion is very common in cases of anteflexion of long standing; but it sometimes presents the reverse condition, and hypertrophy (from previous inflammation) ensues. Sometimes the hypertrophy affects the entire organ. Adhesions to the bladder and the contiguous peritoneal surfaces occur, though very seldom, in either of these displacements, and which render replacement of the uterus impossible. The round ligaments may also gradually become contracted to such an extent as to afford the same obstruction to reposition.

Prognosis of Anteflexion and Anteversion.—The anterior are less serious, if neglected, than the posterior displacements. Anteversion, (or anteflexion,) occurring in early pregnancy, will be spontaneously rectified as gestation advances to the fourth month.

In either of the anterior displacements of the unimpregnated uterus, we cannot promise a complete cure, *i. e.*, a permanent restoration of the uterus to its normal position, within any precise period, or without the employment of some form of intra-uterine support. We may, however, expect to afford relief in every case, and if opportunity is afforded by the circumstances of the patient, to remove all the symptoms in most. We must therefore not promise our patients too much, but candidly explain to them at the outset what we may rationally expect to accomplish. If pregnancy supervene, a cure may be expected from skillful management after parturition; though the best management will not always prevent a relapse.

In case atrophy of the cervix anteriorly has occurred, we may not succeed by any method of treatment in permanently restoring the uterus to its place. Even in these cases, however, the symptoms may be removed, and not seldom also the sterility dependent on the malposition. Our prognosis should, however, be guarded, since we can never ascertain the precise amount of atrophy existing in any particular case.

Treatment of Anteversion and Anteflexion.—In discussing the treatment of the anterior displacements, I shall speak of the different topics in the order already adopted for the treatment of the displacements backward; that both the similarity and the contrasts may be made the more apparent.

I. Treatment of the Anterior Displacements during Pregnancy.

It has been shown (p. 271) that, generally, anteversion is far more common in early pregnancy than anteflexion; while in first pregnancies anteflexion is more common than anteversion. While, also, the posterior displacements during early pregnancy are of serious import, and require prompt and efficient treatment, the anterior are not so, and often require no treatment at all; being spontaneously relieved after the beginning of the fourth month. If, however, much inconvenience results during the first three months, a recumbent position during several hours each day may be advised; or a simple ring pessary if the patient's circumstances do not allow of such repose. Of course the effects of the instrument are to be watched. I have, however, never witnessed the mischievous effects of pessaries in such circumstances, of which I have read so much. Frequently the principal malaise in such cases results from a slight degree of descent accompanying the anterior displacement; and if so, the pessary may give entire relief. At all events, if the patient is more comfortable with the instrument than without it, we need not fear that the danger of miscarriage is increased by its presence. Of course it is to be removed as soon as the uterus rises above the superior strait of the pelvis.

II. Treatment of the Anterior Displacements of the Unimpregnated Womb.

Anteversion of the unimpregnated uterus is more frequent than anteflexion only in those who have had children, (or a miscarriage;) the causes of anterior displacements producing version rather than flexion when the vagina is rendered lax and easily distensible by recent parturition. In others, unless a tumor exist to produce anteversion, anteflexion is altogether more common.

Here, as with the posterior displacements, I should first call attention to the cases suddenly induced. These are almost always cases of *anteversion*, and occur in one recently delivered or immediately after menstruation, in consequence of some violent effort. Occurring in any other circumstances, we should suspect the existence of early pregnancy; and unless we can be very positive it does not exist, the case is to be treated as belonging to the class first considered. If

pregnancy does not exist, the womb is to be replaced, (and usually it can be done without the use of the sound,) and the patient is to be kept lying on the back for a few days, (a week at least.) Attitude is the surest safeguard against a relapse in such cases. A ring pessary is to be worn for a time after she is allowed to sit up and walk; and cold vaginal injections will be found useful in restoring the tone of the vagina.

But *anteflexion* of the non-pregnant womb is almost always gradually induced, and anteversion is not often brought on suddenly; and though some cases present no symptoms, and therefore require no treatment, we expect, as with the posterior displacements, to be obliged to resort to both local and general treatment.

In the way of *general* treatment, however, nothing peculiar is required in this class of malpositions. I therefore refer to my remarks on this subject in Lect. IV., (p. 529,) and here confine myself to the local management of these cases.

Of the *local treatment* of the anterior displacements, the indications are, as of the other displacements, three-fold:

1. To remove the cause of displacement, and certain complications, if still existing and in action.

2. To replace the uterus.

3. To retain it in position.

There is as much skepticism in some quarters in regard to the value of local treatment of the anterior as there is in regard to that of the posterior displacements, and to which I have alluded in the preceding Lecture, (p. 133.) I, however, have no controversy with such; nor with those who, on the other hand, maintain that the treatment of these cases is a very simple matter. I consider the local treatment, as a general rule, entirely indispensable; and shall proceed at once to specify the means I have found the most successful, and therefore consider the most reliable.

1. *Remove still active causes or complications.*—It by no means follows in anterior displacements, any more than in the posterior, that still active causes and complications are always to be removed before the uterus is replaced. In fact, I have generally replaced the organ at once, and then given attention to any complication requiring it. But the question first arising is, whether the uterus is to be replaced at once, or whether some preliminary treatment is previously demanded. Of course, a distended state of the bladder and rectum are to be relieved before the uterus is reposited; and in some cases, any inflammation or decided congestion of the uterus should be previously diminished, at least. Ovarian irritation or inflammation calls still more de-

cidedly for attention before the reposition is attempted; and especially if the use of the sound is necessitated to effect replacement. Still, it should be remembered, that all these causes and complications are more promptly relieved after the uterus is restored to its normal position; and it is only in a comparatively very small number of cases that I should not decide to replace the womb at once, and then attend to the complications mentioned. There is, moreover, usually less risk in doing this in the anterior than in case of the posterior displacements; but no probable risk should be incurred in any case.

The special means to be adopted for the abatement of the conditions I have mentioned have been specified in the fourth Lecture, (p. 525–6,) and to that I refer to avoid repetition.

2. *Replace the Uterus.*—To effect this, the patient may lie upon the back with the pelvis raised, as directed in Lecture V., (p. 26); and in case of *anteversion*, the cervix may be brought forward by means of the fenestrated spoon, as recommended by Mad. Boivin, or by the looped wire described in the last Lecture, (p. 129.) A long index finger may, unaided, accomplish this; or, these means failing, the uterine sound passed an inch into the canal of the cervix may bring the os into position. Since the womb is not flexed, the fundus will pass upward and backward as the cervix comes forward, though we cannot probably carry it higher in this way than into the position of the first degree of anteversion. In case of *anteflexion*, we may also sometimes elevate the fundus uteri to the first degree of the displacement, by pressing against it with the index finger in the vagina. But neither in anteflexion nor anteversion can we with certainty restore the uterus to its normal position by any other means than the use of the uterine sound.* It is to be used as before directed, (p. 275.) In cases of complete anterior reduplication, it is often very difficult to pass the sound beyond the point of flexion, except by a procedure similar to that recommended in Lect. V., (p. 26.) The handle of the sound should be much depressed between the thighs of the patient; when, if the left index finger is used *per vaginam*, to elevate the fundus uteri, the instrument is usually carried by the right hand into the uterine cavity without further delay.

3. *Maintain the uterus in position.*—In these displacements, as in retroversion and retroflexion, the womb—except in rare instances of anteversion suddenly induced—returns nearly if not precisely into the position it before occupied, instantly, or at most a few minutes, after the sound (or other force which replaced it) is withdrawn. Here,

* Previously to the invention of the latter, by Prof. Simpson, it had been proposed to attempt reposition in these cases by means of a sound in the bladder.

therefore, as in the other displacements, we must resort for a time to a mechanical support for the uterus—to some form of pessary.

What kind of pessary shall we adopt, is therefore the important inquiry. Nauche advises a cup-and-ball pessary; Simpson and Valleix a stem pessary; but Churchill thinks such means will seldom be necessary, and may be injurious.* Dr. Peebles uses Hodges' pessary, with a transverse bar in front; on the assumption that if the vagina is "supported to its proper length and height, displacement will be rectified." But he admits, very correctly, that a long vagina, and, of course, high at its upper extremity, is a predisposing cause of these displacements. Can we then "rectify" an anteflexion, when once produced, by again bringing to bear upon the uterus the condition which at first predisposed to its production? Dr. Meigs recommends the globe pessary, two and a half inches in diameter, in case of anteversion; though he says that an ovoid pessary, as large as a Normandy hen's egg, passed into the vagina with the smaller extremity uppermost, and pressing against the fundus uteri through the anterior vaginal wall, is still better in anteflexion. The former, he remarks, "will lift the uterus very high in the pelvis. Its action must be to push the womb upward and backward."† But merely elevating the uterus does not make it straight (or remove the bend) in a case of anteflexion, any more than carrying up stairs a man who has a fracture will reduce the latter—nor bring an anteverted womb into its natural position; for in both cases the womb is lifted *as a whole*, and almost exclusively by a force applied to the cervix. But Dr. Meigs' object in thus lifting the uterus is to elongate the round ligaments, of which he believes a contraction to be the cause of the anterior displacements in the vast majority of cases. *If* such a contraction actually exists, I should consider the globe pessary the best appliance for gradually elongating them, preparatory to replacing the uterus with the sound. But we actually find in at least nine cases out of ten of the anterior displacements, that there is no obstacle to replacement by the sound, except such as is afforded by the mere weight of the body of the uterus; and thus *demonstrate that no such contraction of the round ligaments exists.* Let us, then, prove the existence of such contractions, as we always may by the sound if there be any, before we base our practice upon it. Having detected it, we may very rationally use the globe pessary for a time; and if there be ground for the belief that the contraction results from inflammation or spasm, the seton

* Diseases of Women, p. 323.

† Woman and her Diseases, p. 237.

over the pubes, or ointments there applied, as suggested by Mad. Boivin, may rationally be resorted to.

You will feel obliged, I think, on again referring to my first lecture, (Fig. 1,) to come to the conclusion that an instrument introduced into the vagina merely with the intention of rectifying either anteflexion or anteversion, must rise as high as to the middle of the anterior surface of the body of the womb, in order to retain the latter even as high as the position of the first degree of these displacements; and that such a position of the upper portion of the instrument is anatomically impossible. The like cannot be effected even in case of the posterior displacements, as we have seen, (Lect. VI., p. 135,) though the posterior wall of the vagina is longer and far more distensible than the anterior. Sometimes, indeed, the anterior vaginal wall is so firmly attached to the cervix uteri and to the bladder, that a pessary cannot be made to force it upward towards the body of the uterus in the least degree. We may push an anteflected or an anteverted womb beyond our reach, and out of the pale of our cognizance, by vaginal instruments; but we cannot, by their use, either restore the uterus to its normal position, or retain it there after reposition by other means. I should therefore say of these, as I have asserted respecting the posterior displacements—

1. *It is impossible entirely to prevent anterior displacement by any appliance in the vagina alone.*

2. *The only agent which can certainly retain the unimpregnated uterus in place, in case of anteflexion or anteversion, is an instrument entering the uterine cavity,* (an intra-uterine pessary.)

Shall we, then, entirely discard the vaginal pessary in the management of these displacements, and in all cases use the intra-uterine? By no means. But let us understand precisely why we use the former, and what we may expect them to accomplish. They are merely palliative, and not curative. They merely retain the uterus in a somewhat better position than that in which we found it. But they often give complete relief from all the symptoms, and should be used to the exclusion of the intra-uterine instruments, in more than nine-tenths of all the cases.

I therefore consider first the palliative treatment of these displacements, and then their radical treatment.

1. In the *palliative* management of *anteversion*, a simple ring pessary of tin or gutta percha, large enough fully to distend the upper extremity of the vagina, and thus pull the os uteri forward, is to be used. If an ovate form be given to it, as explained in the preceding

Lecture, (p. 136,) the smaller extremity of the instrument may be made to rise as high against the anterior wall of the vagina, and thus raise the fundus as high as the globe or the ovoid pessary. But it is not merely the height to which the fundus uteri is raised by a vaginal pessary that gives it its value; since it can effect but very little, we have seen, in that way. We need not, therefore, be so very strenuous respecting the precise form of the instrument, provided it fits well. It may, however, prove valuable in three ways: (1.) By pulling the os uteri forward, conception may occur in a patient previously sterile. (2.) It keeps the uterus more nearly at rest, and thus gives great relief, if there be irritation from inflammation or congestion. (3.) It relieves the slight degree of descent which often accompanies anteversion, and which not seldom is the main cause of the patient's suffering.

In case of complete *anteflexion*, I prefer a tin instrument, first fixed in the form of a narrow ellipse, and then curved, so that its two sides fall equally below its original plane; and so that when it is introduced into the vagina, the anterior and the posterior portions are higher than the lateral. In these cases it is desirable that the anterior portion of the instrument rise as high as possible in the vagina. For the fundus uteri having, as it were, dissected off the bladder from the anterior surface of its body and the upper portion of the anterior wall of the vagina, has fallen into the cavity thus formed between the bladder and the vagina, as it does into the Douglass *cul-de-sac*, between the rectum and vagina, in complete retroflexion. The instrument should, therefore, rise high enough entirely to obliterate this cavity, if possible, by its pressure of the vaginal wall forward against the bladder, and thus prevent the fundus uteri from again occupying it. And to accomplish this, it must rise higher than the symphysis pubis; a thing usually out of the question, however, in case the vagina is quite short.

Shall we also advise the patient to keep her bladder pretty full (16 to 20 oz.) of urine all the while after reposition, in order to prevent the womb from falling back again? as suggested by a high authority. I confess I have never rendered such advice. In principle it is like advising to keep the rectum full of its natural contents after reposition in case of retroflexion; and besides, it fails to accomplish its object, since the full bladder in such cases usually inclines to one side, and the uterus to the other, as we have seen.

If, from the presence of adhesions, (or of contraction of the round

ligaments,) reposition cannot be effected, I would advise the application of a globe pessary.

In respect to the time during which the pessary should be worn, and other associated particulars, I again refer to the preceding Lecture, (p. 137.) Levret thought it should be worn 12 to 15 months; "when the leucorrhœa it caused at first ceases, and constitutes a sign of recovery." Désormeaux thought it might be removed much sooner than at the end of the time just mentioned. Here again I refer to Lect. IV., (p. 528.)

2. The *radical treatment* may, on the other hand, be resorted to in a small minority of cases of the anterior displacements. The circumstances in which intra-uterine instruments are here advisable, are essentially the same as those mentioned in the preceding Lecture, (p. 138.) They are contra-indicated by the presence of congestion or inflammation of the uterus or the ovaries, or irritation of either from any cause. Intra-uterine supports are, however, appropriate far more frequently in cases of complete anteflexion than of anteversion; both because the palliative method already explained, though very beneficial in anteversion, is far less satisfactory in anteflexion, and because the radical treatment is usually much better tolerated in anteflexion than in anteversion, or in either of the posterior displacements.

The patient is to be prepared for the use of the intra-uterine instrument in these cases, as in those described in the preceding Lecture, (p. 138,) by the daily introduction of the uterine sound. Less time is, however, usually here required, before the intra-uterine pessary can be used, than in the other class of cases, and it is almost always worn with less inconvenience. I have treated cases of anteflexion in which not the least inconvenience was experienced, (save from a slight leucorrhœal discharge,) after its first introduction.

So long, however, as I used Simpson's intra-uterine pessary, and Valleix's modification of it, I could not have said what I have just asserted. In cases of anteflexion or anteversion, attended by a lax and distensible condition of the vagina—and which is quite common in anteversion, for reasons before mentioned—I have often used the instrument described in the preceding Lecture, (Fig. 8,) with very satisfactory results. But in case of anteflexion in those who have never been pregnant, and in whom the vagina is narrow, and still retains its natural tone, I have found a more simple instrument, which I devised some three years since, to answer equally well. (Fig. 11.)

It is made of pure silver, and consists of a stem, (a tube,) $2\frac{3}{4}$ inches to 3 inches long, and $\frac{3}{16}$ inch in diameter, passing centrally

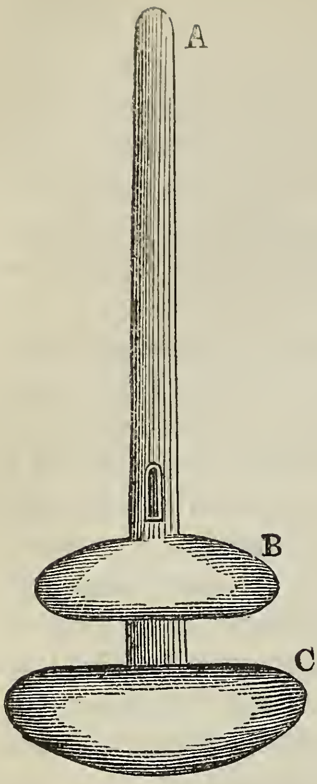

Fig. 11.
Instrument for the radical treatment of anteflexion. A the stem, or intra-uterine portion; B the upper flattened bulb, supporting os uteri; C the lower bulb, resting on posterior wall of vagina. The stem is drawn too large.

through two flattened bulbs. The smaller of them, about $\frac{5}{8}$ of an inch in diameter, is placed about $2\frac{1}{4}$ inches from one end of the tube; this free portion of the tube being the stem or intra-uterine portion of the instrument; while the other bulb, one inch in diameter, is placed at the other end of the tube. When the instrument is introduced, the smaller bulb supports the os uteri, while the larger (one-half inch below the other) rests on the posterior wall of the vagina, above the levator ani. It is passed into the uterus on a staff, as is the stem of the instrument described in the last lecture. A silk thread may be attached to it, so that the patient may remove it at any time, if this become necessary.

You might suspect that so simple an instrument would soon fall out of the uterus if the patient is allowed to walk about. But if the vagina retains its normal tone and dimensions, and the diameter of the lower bulb be well adapted to the case, that canal closes so accurately around the bulb and into the space between the two bulbs, that it is retained in place for weeks or months in succession if required. You will understand that I use it in *anteflexion*, rather than in anteversion, and will perceive that the very tendency of the fundus uteri to return after replacement directs the upper end of the stem forward, and, of course, the lower bulb backward, and thus prevents the instrument from leaving the vagina. You would naturally infer, also, that the instrument would not answer the purpose at all in case of *retroflexion*, where the womb tends to fall backward after replacement. And yet, in some cases of retroflexion in unmarried patients, I have found the contractility of the vagina sufficient to retain the lower bulb in place, if of proper dimensions, in spite of its tendency to move downward and forward towards the os externum. I have seldom found a case requiring a bulb more than one and one-quarter inch in diameter, nor one in which it should be less than three-fourths of an inch. If the os uteri is patulous, a thin plate of gutta percha one inch or more in diameter, with a hole through its centre for the stem to pass

through, may be applied over the upper bulb before the instrument is passed into the uterus.

The measures to be adopted if irritation ensue after the introduction of the instrument are the same as specified in the preceding Lecture. The length of the stem, as well as the size of the bulbs, must be adapted to each particular case, and the instrument is improved for a long-continued use by being gilded both externally and internally by the galvanic process.* I have never had a patient retain it more than four months at a time, though some have worn it over a year at intervals.

Finally, I should add that Amussat first, I think, proposed the radical cure of anterior and posterior displacements, by producing adhesion of the cervix uteri, in case of the former to the anterior, and of the latter to the posterior wall of the vagina. I cannot, however, commend this practice.

Inversion of the uterus will be the subject of the next Lecture.

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LECTURE X.

(October 5.)

Formation of Sugar in Liver after Death—Mode of its Production from Glycogenic Matter—Decomposition of Sugar in the Blood—Increased Production during Digestive Process—Its Accumulation in Disease—Appearance in Urine in Diabetes—Quantity of Sugar Produced and Destroyed Daily—Formation and Discharge of Urea—Decomposition of Fibrin in the Blood—Material Absorbed and Discharged by Respiration—By Digestion and Excretion—Table of Ingesta and Egesta—Entire Quantity of the Blood—Quantity of Fluids Secreted and Reabsorbed—Renovation of Blood in Circulatory Apparatus.

In the last Lecture, gentlemen, we found that one of the most remarkable phenomena of the circulation is the production of the sugar in the liver. The blood coming to that organ by the portal vein contains no saccharine ingredient, in fasting animals, while the blood passing off by the hepatic veins is abundantly charged with it. I told you that this sugar was not formed in the blood itself, but that it was produced in the tissue of the liver, and absorbed thence by the circulating fluid.

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* This instrument also is made by Otto & Reynders, 58 Chatham Street.

The proof of this is, that sugar will continue to be formed in the liver, after it is emptied of blood, and separated from the rest of the body.

Here is the liver which you saw yesterday, and which had been drained of blood by a watery injection. At that time a decoction of the organ did not contain any trace of sugar, and did not cause the least reduction of the oxide of copper in Trommer's test. Since then it has remained untouched, and merely protected from the dust by a glass cover.

You see some of the watery fluid has drained away from the organ, and collected at the bottom of the vessel. I will pour off a little of it, and subject it to Trommer's test. On boiling, you observe, the oxide of copper is abundantly reduced, and the yellow precipitate falls to the bottom of the test-tube.

Sugar has, therefore, made its appearance since yesterday in the tissue of the liver; and it is evident that it is a substance, in this instance at least, of local formation.

But you will remember that this sugar has not been directly and immediately formed from the albuminous ingredients of the hepatic tissue. It has been produced by transformation from the glycogenic matter which previously existed in the liver. Now this glycogenic matter is much less soluble in water than the sugar which it produces. It requires a prolonged boiling of the bruised tissue of the organ to extract it. Accordingly, by injecting the vessels of the liver with cold water, immediately after death, all the sugar which it contained is washed out, while the glycogenic matter is left. During the next twenty-four hours, some of this glycogenic matter is converted into sugar by the influence of an animal ferment, also contained in the substance of the organ, and so the sugar again makes its appearance.

This production of sugar, then, in the separated liver, is a phenomenon of *fermentation* or *catalysis*. It requires a certain elevation of temperature for its accomplishment, like all actions of this nature. If the liver had been placed in ice yesterday, immediately after its injection, and kept at a temperature of 32°, or thereabout, no sugar would have been produced in it. The glycogenic matter would have remained unchanged, notwithstanding the presence of the ferment. But at the temperature of 100° F. the conversion of the glycogenic matter into sugar takes place very readily. As fast as the glycogenic matter is formed in the substance of the organ, a part of it is instantly transformed into sugar, by contact with the animal ferment.

The sugar itself is dissolved and taken up by the blood of the capillaries and hepatic veins, as it is by the water, in an artificial injection.

There is a constant production and renovation, therefore, of these two substances in the tissue of the liver. The glycogenic matter disappears by being converted into sugar, and its place is supplied by new material of the same kind, formed by the nutritive processes of the organs. On the other hand, the sugar is absorbed and carried away by the blood, at the same time that a new quantity is produced from the glycogenic matter by fermentation. So that the liver always contains both sugar and glycogenic matter, though both these substances are incessantly renewed and altered by transformation or removal.

Now let us see what finally becomes of the sugar after its entrance into the blood.

We have already found that it is carried by blood of the hepatic veins to the ascending vena cava. There the saccharine blood coming from the liver is mingled with the venous blood returning from the abdomen and lower extremities. It there passes upward and meets the superior vena cava, bringing the blood from the head and upper extremities. Mingled with this new quantity of venous blood, it is then poured into the right auricle and ventricle, and passes, through the pulmonary capillaries, round to the left side of the heart.

Now, during this passage and admixture, the sugar, which had been derived from the liver under ordinary circumstances, disappears, either from the action of some other ingredients of the venous blood, or from some influence of the air, while passing through the pulmonary circulation, the sugar is altered or destroyed in the lungs, so that it cannot be found in the blood of the left side of the heart. We do not know what are the precise details of this transformation, nor into what new substances the sugar is converted; but we know that its transformation is constant, and that as fast as it is produced in the liver it is normally destroyed in the lungs.

Usually, therefore, there is no sugar in the blood of the arteries. In one part of the circulatory system, viz., that between the liver and the lungs, the blood constantly contains sugar; for this substance is produced in one of these organs and destroyed in the other. For the same reason, it is not to be found elsewhere, and there is no saccharine ingredient in the blood of the general circulation.

But Bernard has found that this is only true in the intervals of digestion. For as soon as intestinal digestion becomes active, the secretory function of the liver is increased, a larger quantity of sugar is produced in the tissue of the organ, and a larger quantity is brought to

the right side of the heart by the hepatic veins and vena cava. After a time this increase in the quantity of sugar in the venous blood becomes so great, that all of it is not destroyed in passing through the pulmonary circulation; and the superabundance then passes through into the arterial system, and circulates generally throughout the body.

There is a time, therefore, some hours after digestion has commenced, when the arterial blood everywhere contains sugar, and where this substance passes through the capillaries of all the different organs.

This is not because the sugar is introduced in larger quantity with the food; for the phenomenon will take place after a meal of purely animal food, which contains neither sugar nor glycogenic matter. It is because the increased quantity of blood, returning from the digestive organs, and circulating through the portal system, stimulates the nutritive processes of the liver, and causes an increased formation of its ordinary products. The sugar is produced in greater abundance by the liver during the digestive process, just as carbonic acid is formed in larger quantity by the system generally, at the same time. The nutritive changes go on more rapidly than usual, and the substances which result from their alteration are produced more abundantly.

But as soon as digestion comes to an end, the activity of the hepatic circulation again diminishes, and the production of sugar to a more moderate standard. The superabundance of this substance then begins to disappear from the circulation, by the ordinary mode of its destruction or decomposition. It may be that the decomposition of this superabundant sugar takes place everywhere, by contact with the other ingredients of the blood, as I have already intimated; or it may be that it is accomplished altogether in the lungs, by the blood constantly returning to the pulmonary vessels, in the natural course of the circulation. At all events, after a certain time the sugar has entirely disappeared from the blood of the arterial system, and is again confined to the veins between the liver and the lungs.

This function, of the production of sugar, and its existence in the circulating blood, has a very interesting relation to the disease which we know as *Diabetes Mellitus.*

You remember, gentlemen, the great rapidity with which we found endosmosis and exosmosis to take place in the living body. Any substance, like iodine or ferrocyanide of potassium, injected into the blood, passes out by exosmosis through the mucous membranes and the glandular surfaces. It requires a certain quantity of such a substance injected into the blood, for it to be detected in the secreted or excreted fluids; but different substances require to be injected in different

quantities, and the same substance will appear with different degrees of facility in different organs.

Now sugar is one of those substances which are naturally destroyed in the blood, and which do not, therefore, appear in the secretions, unless introduced in considerable quantity. In the natural process of digestion, although sugar finds its way into the arterial blood, it does not exist there at any time in sufficient quantity to pass out by any of the secreting surfaces.

But in diabetes, the blood contains sugar in unusually large quantity. This substance, then, exists in the circulating fluid, not only during digestion, but at all times. Its quantity is so great that its destruction does not keep pace with its formation, and it therefore circulates constantly all over the body, and is to be found throughout the vascular system. When a certain point of accumulation is thus reached, the sugar begins to pass out of the blood-vessels by exosmosis; and as it transudes most readily by the kidneys, it then makes its appearance in the urine.

It is in this way that the saccharine condition of the urine is produced, which is the most marked and palpable symptom of this disease.

As to the cause of this accumulation of sugar in the blood, in diabetes, it may be accounted for in two different ways: First, the production of sugar by the liver may be more rapid than in health, the rate of its decomposition and destruction remaining the same; or second, the production of the sugar going on as usual, its decomposition may be interfered with in some manner, thus causing its accumulation in the blood. In the first instance, the sugar discharged by the kidneys would be the surplus saccharine matter, produced by the abnormal activity of the liver; in the second case, the sugar, naturally formed in the liver, would be simply discharged with the urine, instead of being destroyed in the interior of the body.

We are entirely ignorant which of these hypotheses is the true one. M. Bernard has performed various experiments which lead him to the conclusion that it is the abnormal activity of the liver which causes the diseased condition, but I do not think they are sufficiently conclusive to warrant a decision on this point. We only know positively that, in a state of health, there is a certain balance between the production of sugar in the liver and its metamorphosis in the blood; and that in diabetes this balance is disturbed, either by an increase in the activity of one process, or a diminution in the other. At all events,

the superabundance of saccharine matter escapes, by exosmosis, through the substance of the kidneys.

But the glycogenic function of the liver has another relation, of a physiological nature, still more interesting and important to us than its connection with diabetes. It leads us directly to the study of the internal metamorphosis, or *renovation of the blood*, which is one of the most remarkable of all the physiological phenomena of the circulation.

Let us see, for example, what is the quantity of the material produced and destroyed, from this source alone, during twenty-four hours.

Lehmann has found, by examining the blood of the hepatic vein, in the dog, that this blood contains, as an average from six observations, about eight parts of sugar per thousand of the dried residue. This makes a little over 1.5 parts per thousand of the undried blood. Now, from the most moderate estimates, it appears that the entire quantity of blood passing through the liver daily, in the human subject, is not less than 69.02 pounds; and the quantity of sugar in the healthy human liver is found, by examination, to be precisely, or very nearly, the same as in that of the dog. The whole amount of sugar, therefore, produced daily in the human liver, carried away from it by the hepatic blood, and destroyed in the general circulation, is at least 792 grains, or a little over one ounce and a half.

This quantity of material, therefore, is transformed and renewed, by a single process alone, in the course of twenty-four hours.

But there is another substance, beside, that is produced and discharged daily in nearly as large quantity as the sugar, viz., urea. This substance has been long known as the most abundant ingredient of the urine, and the average quantity discharged during twenty-four hours by an adult man, according to the investigations of Lehmann, Hammond, and Draper, is about 500 grains. Now, this urea is not produced in the kidneys, but is formed generally throughout the body. At least it first makes its appearance, so far as we know, in the blood of the general circulation. Its proportion, however, in the blood, at any one time, is very minute; so much so, that it can only be detected by using several pounds of blood for analysis, and is then recognized principally by the microscopic measurement of its crystals.

The proportion of urea usually existing in healthy blood has been found, according to Milne Edwards, to be 0.016 per cent., or a little over $1\frac{1}{2}$ per ten thousand parts. Estimating the whole amount of blood in the body at from seventeen to twenty pounds, the entire quantity of urea in the blood at any one time is not over $22\frac{1}{2}$ grains; and yet we know that no less than 500 grains of this substance is

produced in the body during twenty-four hours, since this quantity is actually discharged every day with the urine.

The reason, why the quantity of urea contained in the blood is kept down to so low a standard, is that it is constantly drained away from the vessels of the kidneys.

As the blood is passing through the renal circulation, the urea which it contains filters away by exosmosis, and appears in the urine. As successive portions of blood, also, rapidly pass through the kidneys, one after the other, the entire quantity of urea in the body is reduced to a minimum; for as fast as it is produced in the general system, it is exuded from the local circulation of the kidneys, so that its production and discharge counterbalance each other, and there is but a small quantity left behind in the blood.

Another very curious instance, of a similar nature, is furnished by the history of the *fibrin* of the blood, and its property of coagulation.

We know that the blood naturally contains, beside albumen, another animal substance, termed fibrin, in the proportion of about 2.5 parts per thousand. The distinguishing peculiarity of fibrin is its property of "spontaneous coagulation." As soon as it is withdrawn from the vessels, it coagulates, or solidifies, in the course of a very few minutes, and cannot afterward be made to resume its original form. And yet, during the circulation of the blood in the vessels, the fibrin is always fluid. It only coagulates when withdrawn from the vessels, or when the circulation is interfered with in some way, either by laceration of the vessels, by ligature, compression, aneurism, or other similar means. But under these circumstances the fibrin always coagulates, in a length of time varying from a few minutes to several hours.

Now, it has been found very difficult to explain this property belonging to the fibrin of the blood. If the fibrin have a natural tendency to coagulate, why should it remain fluid in the vessels? If not, why should it coagulate when withdrawn from them, or even within them, when its movement is arrested by a ligature?

Different observers, accordingly, have endeavored to solve this question in two different ways. Some have asked, "What is the cause of the coagulation of the blood?"—others, "What is the cause of its fluidity in the vessels?" Robin and Verdeil, for instance, come to the conclusion that the blood is only kept fluid by the constant movement of the circulation, and that it accordingly solidifies whenever this movement is arrested or retarded, either inside or outside the vessels. Dr. Richardson, on the other hand, wrote a memoir a few years ago, which received the Astley Cooper Prize for 1856, on "The Cause of the

Coagulation of the Blood,"—in which he considers the fibrin as held in solution, in the blood, by ammonia, and regards its coagulation as a kind of precipitation, caused by the escape of its ammoniacal solvent.

But there are several facts which are opposed to Dr. Richardson's hypothesis, and his conclusions have not been generally adopted. The most commonly received opinion for several years has been that of Robin and Verdeil, which regards the fibrin as having a normal tendency to coagulation, owing to its physiological nature and constitution; but as prevented from coagulating by the peculiar movement which is kept up by the circulating blood, in the vessels of the living body. This hypothesis did not attempt to explain how it were possible for such a mechanical movement to prevent the chemical or physico-chemical process of coagulation; it only pointed out the fact that the blood remains fluid while moving through the vessels, and that it coagulates under every other condition.

But it now appears that the fibrin of the blood, like the sugar of the liver, is constantly undergoing a natural metamorphosis and renovation in the interior of the body.

Simon, Bernard, Lehmann, and Brown-Séquard have made a variety of observations, which show that the venous blood, coming from the kidneys and the liver, is either destitute of fibrin, or contains this substance in much smaller proportion than arterial blood. The fibrin, therefore, disappears from the blood, while passing through these organs; and as it still continues to be found in the general mass of the blood in its ordinary proportion, viz., 2.5 parts per thousand, it is evident that it must be as constantly *produced* somewhere in the body, so that its decomposition in the liver and kidneys is counterbalanced. The entire quantity of blood flowing through both the kidneys and liver per day, in the human subject, is not less than 78.5 pounds, or 550,000 grains. The whole amount of fibrin, accordingly, which is destroyed in these organs, and reproduced elsewhere, per day, is 2.5 parts per thousand of the above quantity, viz., 1,375 grains.

When we remember that a pound of ordinary blood contains only 17.5 grains of fibrin, and that the whole amount of this substance contained in the body, at any one time, is certainly not over 355 grains, it is evident that the fibrin of the entire blood is destroyed and reproduced in the circulation, at least three times over in the course of a single day.

We understand, accordingly, why the fibrin of the blood should have the property of spontaneous coagulation, and yet should not coagulate, so long as its circulation is kept up in the vessels of the

living body. The fibrin is not a permanent, but a temporary ingredient of the blood. Each portion of it, when formed by the processes of nutrition, is destined within a few hours to be decomposed or transformed, by the kidneys and liver, into some new substance, of different properties. Before the time has arrived for its coagulation, therefore, it has already undergone this transformation, and its place in the blood is taken by a new quantity, of recent formation.

But if, from any cause, the natural transformation of the fibrin be interfered with, it inevitably coagulates. Thus, if the blood be withdrawn from the vessels, it solidifies in a short time, because its fibrin remains undecomposed. The same effect follows if the blood be extravasated into the areolar tissue, or into the parenchyma of the internal organs; or if it be arrested in the vessels, by the application of a ligature. Even if the movement of the blood be simply retarded, by a varicose condition of the veins, or by the aneurismal dilatation of an artery, coagulation is very apt to take place in that part of the vessel in which the stream is most sluggish.

In all cases, interference with the circulation gives rise to coagulation of the fibrin, in a condition of health.

For the same reason, a local coagulation takes place wherever an obstruction of any kind is met with in the circulatory system. Thus we find fibrinous coagula deposited upon the edges of the aortic valves, when they are thickened and roughened by disease; and during the last hours of life, when the circulation is performed slowly, the blood often coagulates upon the valves and tendinous cords in the ventricles of the heart.

We see, then, that in the liver, the kidneys, and the general circulation, the constitution of the blood is incessantly undergoing alteration, by the simultaneous formation and disappearance of sugar, urea, and fibrin. Another change, of at least equal importance, is that connected with the process of respiration.

We know that the tissues require for their nourishment a constant supply of oxygen. This oxygen is conveyed to them by the arterial blood, which contains it in large quantity, in solution in the blood-globules. While passing through the capillaries of the general circulation, the blood therefore gives up the greater part of its oxygen, and absorbs from the tissues carbonic acid instead. Consequently, it is incessantly altered, from a fluid rich in oxygen and poor in carbonic acid, to one poor in oxygen and rich in carbonic acid.

But in the pulmonary circulation, exactly the opposite change takes place. Here the blood exhales its carbonic acid, and absorbs oxygen

from the atmospheric air in the lungs. Or, more properly, these gases pass, by endosmosis and exosmosis, into and from the blood, through the medium of the pulmonary membrane. The blood, accordingly, during every twenty-five seconds, is undergoing two corresponding alterations, by a double interchange in the proportions of its oxygen and carbonic acid.

Now let us see what are the quantities of these gaseous ingredients which are so frequently renovated.

The ordinary quantity of air taken into the lungs with each inspiration is about twenty cubic inches. Counting eighteen respirations to the minute, this makes 360 cubic inches of air per minute, 21,600 cubic inches per hour, and 518,400 cubic inches per day. But since the movements of respiration are somewhat hastened by any active exertion, the actual daily quantity of air used in respiration is not less than 600,000 cubic inches, or about 350 cubic feet. In respiration, the air loses, upon an average, 5 per cent. of its volume of oxygen. The total quantity of oxygen, therefore, absorbed by an adult man, during twenty-four hours, is seventeen and a half cubic feet, or about four times the bulk of his own body. This equals, in weight, 7,134 grains, or a little over one pound, avoirdupois.

The quantity of carbonic acid exhaled may be ascertained in a similar way. The expired air usually contains about four per cent. of its volume of carbonic acid. According to the results obtained by the best German and French observers, the quantity of this gas exhaled is very nearly 1,150 cubic inches per hour, or fifteen and a half cubic feet per day. This is, by weight, 10,740 grains, or a little over one pound and a half.

Every day, therefore, the blood receives a pound of one material, and discharges a pound and a half of another, by respiration alone.

Beside this, however, a certain amount of aqueous vapor is always discharged with the breath; more abundantly in a dry atmosphere, less so in a moist one.

The blood is also replenished by the absorption, each day, of a large quantity of solids and fluids, derived from the digestion of the food. These substances are taken up by the blood of the portal vein, and, after passing through the liver and the lungs, are mingled with the general mass of the circulating fluid. The average amount of these substances is easily ascertained by experiment.

A corresponding quantity of material is discharged daily by the

skin, the kidneys, and the other excretory passages. The urine, per day, contains a little over two pounds of water, 500 grains of urea, and a smaller quantity of other solid matters. Nearly two pounds of fluid, according to Lavoisier and Seguin, are also discharged with the cutaneous perspiration; and a certain quantity of insoluble material is secreted by the large intestine and discharged with the fæces. From these data I have constructed the following table, showing, in an approximate manner, the total amount of ingesta and egesta for twenty-four hours, as follows:

Absorbed during twenty-four hours.		*Discharged during twenty-four hours.*	
Oxygen	1.019 ℔s.	Carbonic Acid	1.535 ℔s.
Water	4.275 "	Aqueous Vapor	0.445 "
Albuminous Matter	.340 "	Perspiration	1.965 "
Starch	.590 "	Water of the Urine	2.020 "
Fat	.220 "	Urea and Salts	.150 "
Salts	.056 "	Fæces	.385 "
	6.500 "		6.500 "

No less than six pounds and a half, therefore, are absorbed and discharged daily by the body of a healthy adult; and for a man weighing 140 pounds, a quantity of material, equal to the weight of the whole body, passes through the system in the space of twenty-two days.

We must remember, furthermore, that all this absorption and discharge takes place through the blood. These materials do not simply pass through the body as foreign substances. They are absorbed by the vessels, and become ingredients of the circulating fluid; and are then, in great measure, decomposed in the blood, and finally discharged under other forms. It is the blood which absorbs fat and albuminous matter in one organ, and discharges urea or carbonic acid in another.

But we have already seen that these changes of the ingesta and egesta are not the only ones suffered by the blood in the circulation. There are many substances, formed in the internal organs, which enter the blood at one part of the circulatory system, and are decomposed at another. Liver-sugar and fibrin are both instances of this. Neither of them are introduced with the food, and neither of them appear in the excretions; for both their origin and their decomposition take place within the limits of the organism itself. There is a series of internal as well as external changes, therefore, by which the blood is incessantly altered in constitution as it passes through the ound of the circulation. Beside this, many of the secretions, after

being discharged from one glandular organ, are reabsorbed, and again enter the blood in another part of the body. Thus the saliva, secreted by the salivary glands, is discharged into the mouth, mingled with the food in mastication, swallowed into the stomach, and afterward reabsorbed. The gastric juice, after being secreted by the mucous membrane of the stomach, is again taken up by that of the intestinal canal. The pancreatic juice, which emulsions the fatty substances of the food, afterward forms a part of the chyle, and so enters the lacteals and the portal vessels. Various investigations have now shown that the bile itself, after being produced and discharged by the liver, is reabsorbed from the intestine, and again mingles, under a different form, with the other ingredients of the blood.

Let us now form an estimate of the entire amount of this internal circulation of fluids, thus passing from and returning into the vascular system.

But first, it would be desirable to ascertain the entire quantity of the blood itself. This has always been found a difficult matter, owing to the readiness with which absorption takes place between the blood-vessels and the tissues. For as soon as we begin to bleed an animal, the blood withdrawn by hæmorrhage is partially replaced by a serous fluid absorbed from the tissues; so that while the *volume* of the blood is partly replenished, its *density and constitution* are at the same time altered.

Becquerel and Rodier found that this change in the composition of the blood, during hæmorrhage, took place with unexpected rapidity. The alteration, according to them, is a continuous and progressive one, "beginning," as they say, "with the first drop of blood which escapes, and ending only with the last." They found that, in the human subject, if only twelve ounces were drawn from the arm at one time, there was a perceptible difference in constitution between the blood drawn toward the end of the venesection, and that which escaped at the beginning. In some instances, the proportion of solid matters had fallen from 167 to 163 parts per thousand, and that of the fibrin from 2.42 to 2.17 per thousand.

It is impossible, therefore, to ascertain the exact quantity of blood by a simple bleeding; or even, as it has been suggested, by bleeding to a small quantity, then injecting with a saline solution, and afterward, by a second bleeding, determining the change thus produced in the constitution of the blood. For the blood, as we have already seen, will be altered in its constitution by the bleeding as well as by the injection, and it would not be possible to decide how much alteration was due to either cause.

The best plan yet proposed is that of Lehmann and Weber. They collected the blood of two criminals, who were executed by decapitation, and measured the quantity thus escaping from the vessels. They then injected the vessels of the head and trunk with distilled water, and after collecting the bloody fluid which escaped from the veins, ascertained the quantity of solid material which it held in solution, and from that estimated the quantity of blood remaining in the vessels after decapitation. This, added to that which escaped from the vessels at first, gave a total quantity of from seventeen to eighteen pounds.

This method itself is not entirely accurate. For in a watery injection of the vessels after death, the water not only transudes and infiltrates the surrounding tissues, but it is also liable to absorb various substances from the tissues, in different proportions from those in which they would be taken up by the blood. Still, it is a better mode than any other which is practicable, and sufficiently exact for ordinary purposes. There is no doubt that the natural quantity of blood in the healthy adult man, of average size, is not less than seventeen, and not more than twenty pounds.

But an equally interesting question, in regard to the internal alteration and metamorphosis of the blood, is the rapidity with which the blood passes through the different organs.

We have already seen, in a previous Lecture, that the blood performs the entire round of the double circulation in from 25 to 30 seconds. That is, a certain portion of blood, after passing the middle of the jugular vein, will return to the same point in about half a minute. But how often, during a given time, does the *entire quantity* of blood pass a given point in the circulatory system? In other words, how rapidly does the whole of the blood pass through the whole of the circulation?

This may be ascertained by determining the quantity of blood discharged from the left ventricle at each pulsation of the heart. This quantity is usually estimated at two fluid ounces, and it is by some taken for granted that the ventricle empties itself completely of blood at each pulsation. This conclusion has been drawn from the appearance of the left ventricle when contracted, as it usually appears some hours after death. But this *post-mortem* contraction, as I have already told you, does not represent the natural condition of the ventricle during life, but is a true cadaveric rigidity, like that of other parts of the muscular system.

But even in the condition of *post-mortem* contraction I have not

found the cavity of the left ventricle so completely obliterated as we might be led to suppose. In making transverse sections of the left ventricle of the bullock's heart, in this condition, at different levels, it can be seen that, while the opposite surfaces of the ventricle are in contact with each other toward the apex of the organ, they are always separated, by a certain space, at its middle and toward its base.

I have also measured the capacity of the left ventricle of the bullock's heart, after cadaveric rigidity was fully established, by filling it with water, up to the level of the mitral and aortic valves, with the following results:

Bullock's heart	No. 1,				contained	$1\frac{3}{4}$	fluid ounces.
" "	2,				"	2	"
" "	3,	(weighing	4	lbs.,)	"	$2\frac{1}{2}$	"
" "	4,	"	$4\frac{3}{4}$	"	"	$1\frac{7}{8}$	"
" "	5,	"	5	"	"	$1\frac{1}{2}$	"

It has always appeared to me, beside, in watching the movements of the heart, when exposed in the living animal, that the ventricle does not empty itself completely at each pulsation, but that, like the arteries, it always contains a certain amount of blood, when contracted as well as when in a state of dilatation.

If we estimate, therefore, the quantity of blood discharged at each ventricular contraction at half an ounce, and the number of cardiac pulsations at seventy per minute, this will give 35 ounces of blood discharged per minute, 2,100 ounces, or about 130 pounds, per hour, and 3,120 pounds per day. According to this calculation, the entire quantity of blood in the body passes through the heart at least 150 times over, in the course of twenty-four hours.

I have endeavored to ascertain the quantity of blood thrown out rom the heart in a given time, by direct experiment. For this purpose, I produced insensibility in a dog, weighing fourteen and a half pounds, by the inoculation of woorara, keeping up artificial respiration by means of a bellows inserted into the trachea; then opened the chest, and exposed the heart and arch of the aorta. On cutting across the aorta, just above its origin from the left ventricle, I found hat 300 grains of blood escaped from the divided orifice in fifteen seconds. This would give 1,200 grains per minute, 72,000 grains per hour, and 247 pounds per day, or about 17 times the weight of the whole body.

This experiment, even, cannot be regarded as accurate. For, on the one hand, when we cut across the aorta, the blood is relieved r om the resistance of the capillary system, and therefore has a ten-

dency to flow out of the wound more rapidly than it would pass through the vessel during life; and on the other, the opening of the chest and exposure of the thoracic organs diminish very much, as we have already seen, the force of the heart's action, and therefore lessen the quantity of blood which would be discharged from it. However, if we apply this result to an adult man, of 140 pounds weight, we find that the entire quantity of blood so discharged would be 2,380 pounds.

It is safe, therefore, to regard this estimate as below rather than above the truth; and there can be no doubt that, in the human subject, the quantity of blood passing daily through the heart is considerably over two thousand pounds.

A proportionably large quantity, of course, passes through all the vascular organs in the same length of time.

Now let us see in what quantities the various secretions are produced from the circulating fluid.

Without going over all the details by which these quantities have been ascertained, I will merely mention that in each case the estimates have been arrived at by direct experiment, so that nothing is left to surmise; and that the numbers given are always the minima, rather than the maxima, of those adopted by the best authorities.

The total quantity of *saliva* secreted daily is about 20,164 grains, or a little less than three pounds avoirdupois. The quantity of *gastric juice* is much greater. The most moderate estimate, based upon actual observation, gives fourteen pounds as the total daily amount; and from my own experiments, I have no doubt that this is substantially correct. The *pancreatic juice,* again, seems to be considerably less in amount—not much over one-third of a pound in twenty-four hours. From the very careful and judicious observations of Bidder and Schmidt, the daily quantity of *bile* is found to be not far from two and a half pounds. The quantity of the *intestinal juice* has never been ascertained with any approach to accuracy, though it is no doubt quite large, since the follicles of Lieberkühn are very abundant, and the extent of secreting surface in the intestine not less than from seven to eight square feet.

At least from nineteen to twenty pounds of fluid, therefore, are separated from the blood by the glandular organs every day.

But we must recollect that these secretions are all reabsorbed in the natural course of the circulation, and again enter the vascular system at different points. The blood, accordingly, is not impoverished by this abundant supply of secreted fluids, but only renovated

and altered; for the quantity of material withdrawn from it by one process is constantly returned to it by another.

You can estimate, therefore, gentlemen, the incessant changes which take place in the circulating fluid, during its passage through the vascular system. The relation between the blood and the various organs and tissues is one of mutual dependence and interchange. The blood absorbs from the tissues, and the tissues absorb from the blood; and so rapidly and extensively does this process go on, that a quantity of fluid equal to the whole mass of the blood passes and repasses through the secreting and absorbing surfaces every day. Every organ, too, produces its own peculiar modification in the blood which passes through it. Even the *quantity* of the blood is variously modified in different organs; for in some its mass is increased, in others diminished. In the intestine, for example, the blood absorbs more than it loses; in the kidneys, on the other hand, it is diminished by exhalation, without any corresponding supply.

Beside this, we have already seen that the blood is undergoing a constant internal alteration, by the alternate formation and disappearance of its own ingredients. Some of these are formed in the blood, such as fibrin and urea; others are absorbed from the tissues, such as cholesterin and carbonic acid. Some are decomposed in the circulation itself; others are discharged and eliminated by the excretory organs.

We can understand, then, how complete is the change effected by all these processes in combination. It is not only certain ingredients of the blood which are modified or altered in the circulation; but it would be more proper to say that the *entire blood* is renovated and transformed, while passing through the vascular apparatus. It was an opinion entertained by some of the older physiologists, that the arterial blood was used up and appropriated by the tissues, and that the venous blood was a fluid of new formation, supplied by the tissues themselves. We see now that this opinion was very nearly a true one, though in a different sense from that in which it was at first understood.

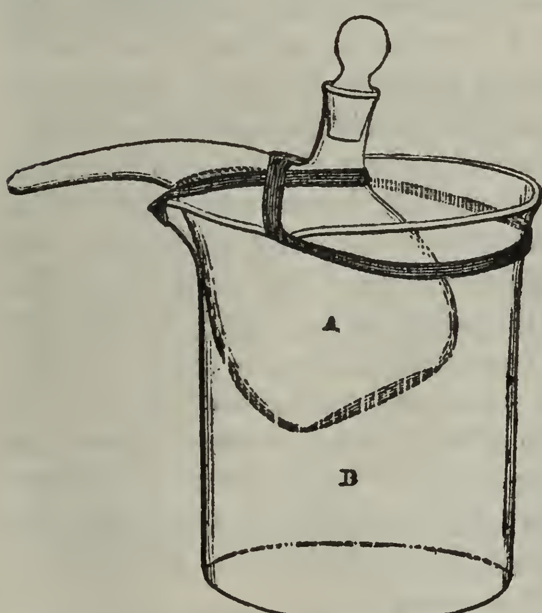
The arterial blood, it is true, passes directly, by the channels of the capillary vessels, into the venous system; but during this passage it is almost entirely changed. The blood-globules lose their oxygen and absorb carbonic acid; and the ingredients of the plasma are taken up by the tissues, transformed, or replaced by other substances. *The blood, therefore, which passes out of an organ by the veins, is not the same blood which passed into it by the arteries.* The ingredients which it has

lost have been decomposed or imbibed by the neighboring tissues; while those which it contains instead, have been absorbed from the substance of the organ, or produced in its interior by the mutual reaction of the solids and fluids.

These, gentlemen, are the regular and incessant alterations which the blood undergoes in the course of the circulation. It remains for us to study the variations which take place, in these processes, at different times, and in different parts of the vascular system.

A New Instrument for the Novel Application of Anæsthetic and Stimulating Vapors for Deafness, Neuralgia, &c. By H. P. DEWEES, M.D., New York.

DR. DOUGLAS: *Dear Sir*—In reply to your note respecting my instrument for etherization and vaporization in certain diseases of the ear, I will furnish you with a drawing of its arrangement, and a description of its use, as employed by me not only in aural disorders, but also in neuralgia requiring local anæsthesia, and some diseases of the spinal column in which topical irritation is called for, varying from an artificial glow up to absolute cautery.



The instrument originally used by me during the last fourteen years is still in my possession; but, from the inconvenience and imperfectness attending vaporization by the heat of the hand, or by holding it in warm water, I have laid it aside, and have contrived the one to which you refer. This instrument (see cut) consists of a delicate Bohemian glass retort, with a nozzle projecting an inch and a half, perforated by a capillary aperture. The supply-tube of the retort rises about an inch above the level of the curved neck, thus allowing greater freedom in pouring in the fluid to be evaporated. A cork stopper, with an elastic cap or holder to prevent its expulsion, or a ground-glass

capillary tube stopper, closes this entrance, the one or the other to be used according to circumstances of application. The retort, when charged with the fluid to be evaporated, is then lodged within a hard glass receiver, three inches high, having its rim lipped deep enough to embrace the projecting nozzle of the retort, thus affording greater steadiness, besides serving as a catch for the elastic band retaining the nozzle in its projection. Small nipple-like catches are studded on the opposing centres of the rim of the receiver, to afford resisting points for the elastic back band which passes from under the posterior rim across the front of the supply-tube. By these two elastic bands, the mobility of action is fully commanded in the projecting nozzle.

The mode of using this simple but astonishingly effective little instrument requires but little practice to regulate it to the necessities of the case. About two drachms of ether are to be poured into the retort when secured in the receiver. The stopper should be firmly fastened, and the finger can be readily placed over the nozzle aperture during or after the introduction of the warm water or sand into the receiver. A rushing or blowing sound of the escaping vapor or gas immediately ensues through the aperture, if uncovered. The nozzle is then introduced within the auricle, and a little experience will soon teach the time and proper distance (from the drum) of the application. Moderately warm water will only be required for sulphuric ether; the degree of heat to be varied according to the specific gravity of the evaporable fluid, and according as a slow or rapid disengagement is needed.

Besides its use in etherization of the ear, this little instrument affords in neuralgia the most elegant mode for the application of local anæsthesia; the constant current from the evaporating ether, chloroform, &c., being readily applied directly to the suffering part, and made to follow the course of the painful nerve. When it is wished to apply the anæsthetic locally, I use a ring of adhesive plaster or of kid, to prevent the diffusion of the vapor over the surrounding parts. A common pill-box, perforated to admit the nozzle of the instrument, and applied over the part, also answers well. In inhalation, or in etherization, through the Eustachian tube, the capillary glass stopper will be found preferable, as it admits a sufficient admixture of air, as well as an outward communication for breathing.

In certain spinal or nervous disorders, this instrument affords a most ready and exclusive mode of applying heat, which can be made to vary from a simple glow to the moxa or absolute cautery. This is effected

by igniting the jet as it passes through the capillary tube of the nozzle, the amount or force being regulated by the evaporizing temperature employed, and the distance from the part. The circular protections above mentioned are useful when the moxa is required.

In some of the diseases of the ear, where, besides the anæsthesia to the inner nervous distributions, a *local stimulant* or *irritant* to the drum or the auricle is wanted, this instrument offers a ready method of effecting the desired end, viz., by adding to the ether, or other fluid, a volatile stimulant, as for instance, the Ess. ol. sinapis, diluted. No practitioner should be without one, from the extensive capacity of the varied adaptability of the instrument. In diseases of the ear or in neuralgia, it can safely be intrusted to a patient for self-application. Many volatile substances can be directly applied through its agency.

In closing this note, I will state that Messrs. J. F. Luhme & Co., No. 556 Broadway, are the sole manufacturers of this instrument, and, I believe, at the price of $1.00.

791 Broadway, N. Y., *Sept.* 17, 1860.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. Gibbs, M.D., Frewsburg, N. Y.

Diphtheria.—In the *Lancet and Observer* for August, Dr. C. A. Hartman, of Cleveland, Ohio, has quite a lengthy paper upon the subject of diphtheria. It is a thorough *résumé* of the subject, and the opinions of the most authoritative in the matter are fully stated. Though twelve pages of treatment are given, the author does not give his own opinions upon that all-important part of the subject. We refer to the paper for two purposes: first, to remark that it is the best *résumé* of the subject we have seen, showing that the author has read all that has been written upon the subject, and as embracing the opinions of the various authors in one article; and *second*, to refer to the statement of one complication, which complication we have observed, and yet, we think, is often overlooked. He says, " latent pneumonia is frequently discovered in the dead body." The remark we wish to make here is, that we believe there is a peculiar liability to this complication in diphtheria. We have observed it so often, not in the " dead body," but the living patient, that we cannot think it altogether an accidental circumstance. In full one-half of the cases that have fallen under our observation we have discovered the physical signs of pneumonia. The complication is seldom discoverable except by the physical signs, as the patient complains of no pain about the chest; often there is no cough, and no expectoration, other than might be expected to come from the throat.

In a former paper we have said that we considered whiskey superior to all other medication in this disease. The question which would naturally suggest

itself to the minds of our readers is, should this be withheld in the pneumonic complication? We have not withheld it, and have seen no bad results from its continuance. The only special treatment we give such cases is opium in tolerably full doses in combination with ipecac, and the application of a blister.

In the *Chicago Medical Examiner* for August, the editor, Prof. N. S. Davis, has an article upon diphtheria. He says, "We regard diphtheria as an affection intermediate between scarlatina and membranous croup." In regard to treatment, he recognizes three indications to be fulfilled: "1st, to restore the normal condition of the blood by increasing the solubility and excretion of the fibrin, and thereby remove the tendency to further pseudo-membranous deposits in the fauces or elsewhere. 2d, to correct the perverted properties of the solids, and thereby restore a more healthy secretory action generally, and arrest the febrile movement. 3d, to mitigate the local inflammations." In the fulfillment of the first indication he makes use of "the chlorates of potassa and soda," and if need be the muriated tincture of iron. To fulfill the second indication, he resorts to calomel and Dover's powder at first, and subsequently the following:

"℞.—Nitrous ether, ℥jss.
Tinc. gelsemin, ℥ss.
Tinc. belladonna, ℥j.

Mix, and give from 10 to 30 drops, according to the age of the patient, every three or four hours." To meet the third indication he resorts to local measures principally, in regard to which there is nothing new, and we have not the space to recapitulate.

In the *Boston Medical and Surgical Journal* for August 16th, Dr. L. R. Morse has also an article upon the subject of diphtheria. He asserts that "the present epidemic, 'Diphtheria,' is neither more nor less than the old 'putrid sore throat,' but now spreading both in Europe and America, in a more decidedly *epidemic form* than usual." In regard to treatment nothing peculiar is suggested. He speaks highly of "strong salt and water" gargle, as we have done before. Even better than this under some circumstances, he thinks is "the strong hydrochloric acid, diluted with four to eight parts of water," and applied by means of a sponge. The general treatment, he thinks, should be much the same as in typhoid fever. In regard to stimulants he says, "I feel bound to object, in the most decided terms, to the indiscriminate use of the *very large* quantities of brandy often resorted to in this disease." Upon the subject of whiskey in this disease, our opinions have been already expressed.

In the *American Medical Times*, for August 11th and 18th, Dr. A. Jacobi has an able article upon the subject of diphtheria. Our limited space will not justify a synopsis of his opinions, but we shall try to find space for a remark or two in regard to treatment. In regard to local measures, Dr. Jacobi recommends the application of a solution of nitrate of silver, tannin, hydrochloric acid, &c. In regard to general treatment, he says, "Mercury must be avoided; no blood be drawn; no vesicatories applied; in a word, no antiphlogistic treatment should be resorted to." * * * "Emetics must be avoided as much as possible; but they will sometimes prove necessary to remove accumulations of mucus or macerated membrane." Muriated tincture of iron, chlorate of potash, and nitro-muriatic acid, are each well spoken of. Dr. Jacobi's remarks upon quinine are worthy of being quoted entire. He says, "Of the greatest value is that powerful febrifuge, quinine. We have but seldom

used it as a tonic, but generally in one or two large doses (from five to ten grains in children, of the sulphate or muriate, the latter containing more quinine) daily. We have never seen any bad effects, but have always found a great and rapid remission of the fever. If one dose was taken, we ordered it in the afternoon, usually between three and five o'clock; another was sometimes taken in the morning for one or two days, until there was no necessity of administering it twice. A *conditio sine qua non* is a full dose. A child of a year or two must not have less than five grains in a daily dose; we have even to children of two or three years repeated doses of ten grains, and have been fully satisfied with its effect. We have in no disease observed less cerebral symptoms attributable to the effect of quinine than in diphtheria." Albuminuria is a frequent symptom in diphtheria; of this symptom, Dr. Jacobi says, "Albuminuria requires tannic acid; we seldom give any other remedy, and warmly recommend it." Dr. Jacobi's experience in this disease is probably equal to that of any man's in America, and yet he says, "We have no particular remedy to recommend; the treatment should vary according to the case."

Linear Extraction of Cataract.—In the *N. O. Medical News and Hospital Gazette* for August, Prof. C. Beard has an able article upon operations of the eye, with the report of twelve interesting cases, accompanied with eighteen lithographic illustrations. We will not attempt a *summary* of the cases, but will quote the conclusion of one case, in which four operations (two on each eye) were performed, and an accompanying remark, containing an important practical suggestion. The two operations upon the first eye were successful. The first operation upon the second eye gave the following results: "The cornea and conjunctiva natural; iris pressed forward into the anterior chamber, presenting considerable convexity, but no discoloration or other marks of disease; pupil, although dilated, somewhat irregular, but, as far as could be seen, not adherent."

"The case was abandoned to absorption for a few weeks, at the end of which no perceptible change had taken place in the condition of things. It may not be improper to remark, in this connection, that as far as my experience extends, absorption is exceedingly slow in cases presenting the condition which resulted from this operation." * * * "I therefore determined, in this case, to strike at its foundation, and remove the unabsorbed lens by linear extraction; this was performed in the following manner: The patient being in a semi-reclining position, a Beer's cataract-knife was passed perpendicularly to the plane of the cornea, at a point corresponding to the outer margin of the dilated pupil, the point of the knife being pressed sufficiently deep to make an incision two lines in length. The curette was then introduced through the incision, the convex portion resting on its outer lip; very slight pressure upon the globe sufficed to force out the ruptured lens, nearly the whole being removed. A large space of black pupil was the result. Care was taken that no particle of the cataract should remain between the lips of the wound on withdrawal of the curette. The patient's eye was closed with isinglass plaster, iced applications were made, and atropine used for three days, during which time no inflammatory symptoms occurred. Upon opening the eye, union, without perceptible cicatrix, was perfect; patient's vision good. Since that time, the pupil having contracted in such a manner as to conceal the ragged periphery of the capsule, the organ presents a perfectly natural appearance. Sight as good as in the left eye.

"The chief point of interest in this case, as far as regards the right eye, is the rapidity with which a cure was effected, under circumstances which, if the needle alone had been used, would have required months for its performance, to say nothing of the dangers incurred from second, third, or even fourth operations, which are sometimes necessary before the complete removal of the soft cataract by absorption.

"I think it to be a settled question that wounds of the cornea, whether incised or punctured, heal more readily, and give rise to less disturbance, either functional or organic, of the globe than those of the sclerotic, and am resolved hereafter, in all cases of soft cataract in which absorption does not very rapidly take place, after a first operation for solution, to remove the disorganized lens by the method practiced in this case. If I am thought hasty in this conclusion, as to the value of linear extraction under such circumstances, I can cite four or five instances in which I have, by this method, successfully removed soft cataracts of traumatic origin."

Spina Bifida.—We have previously referred to Prof. Daniel Brainard's plan of treating spina bifida with injections of iodine. In the *Chicago Medical Journal* for August, Prof. Brainard reports another case (his sixth) thus treated. The patient was eight months old, and the tumor "measured six inches in circumference around the base, eight inches around its largest part, and was elevated two inches above the surrounding skin." Two injections were made, with an interval of eight days. "During the operation a tape was tied tightly around the base of the tumor, so as to cut off the connection with the spinal canal, and the child kept under the influence of chloroform." Pressure was made after the injections, and thirty days after the first injection the tumor formed "only an innodular mass, diminishing in size." Prof. Brainard says, "In any similar case I should desire: 1st, to tap the sac, and draw off the serum; 2d, to make compression, so as to prevent the iodine from entering the spinal canal; 3d, inject a solution of iodine, of the strength of five grains, and thrice that quantity of iodide of potash to the fluid ounce of distilled water; 4th withdraw the injection, wash out the sac with distilled water. The puncture should be carefully closed after withdrawing the canula."

Before the *New York Pathological Society*, Dr. W. Detmold *(American Medical Times*, August 11th,) reported a case of *spina bifida*, effectually treated by repeated punctures. He remarked that this was the only case he had seen get well under any operation. In the discussion before the Society, which followed the report of this case, it is a little surprising that the treatment by injections of iodine, first proposed by Velpeau, and subsequently repeatedly practiced by Prof. Brainard, of Chicago, with comparative results far more successful than has followed any other operation, should not have been referred to.

Cephalic Version.—In the *Kansas City Medical and Surgical Review* for July, Dr. C. A. Logan has an article upon the above subject, with the report of a successful case. The case was one of shoulder presentation, and we give Dr. Logan's treatment: "As the woman would lie in no other position than on her back, having been previously confined so, I placed her crosswise in bed, near its edge. The hand of the nurse was then placed on the abdomen over the region of the pelvic extremity, and directions given to make pressure upward and inward towards the median line. My left hand was applied over the child's

head, with the intention of pushing it towards the strait at the proper time. The right was gently introduced, and three fingers placed upon the shoulder, and firm pressure made in the absence of a pain, obliquely from left to right, and from below upward. After some little time thus spent, being obliged to desist during a pain that ensued, I had the satisfaction of feeling the shoulder recede before my pressure, and in a hurried effort to grasp the head, as might have been expected, I broke the membranes. A violent pain immediately came on, but I succeeded in fixing the head in the superior strait in the second position of Churchill, (the *right* shoulder had presented,) and retaining it there until it was forced down into the excavation.

The child was born in forty minutes after this procedure, and although small, was very vigorous. This operation, although crowned with a success that surprised me, I am not disposed to go off into ecstasies over, and declare that it is *the superior* of all others, and that it *alone* should be practiced. On the contrary, I am satisfied that, had the membranes been ruptured for any length of time, so as to permit the uterus to contract firmly upon the body of the child, and wedge it down into the cavity, that no amount of force that could be applied consistent with the integrity of the soft parts of the mother, could have dislodged it."

This subject is one of interest, for statistics show that one-third of all the children that are delivered by turning are lost, and one in sixteen of the mothers, in which turning by the feet is performed. If cephalic version is adapted to a certain portion of mal-presentations, and is safer to mother and child, it should be generally known and practiced. In the MONTHLY for August, 1856, Dr. H. G. Carey has an article upon this subject, from which we propose to quote a remark or two. He says, "Few propositions are better established than the complete control which the accoucheur has over the child, prior to the rupture of the membranes."—(A. M. MONTHLY, vol. 6th, p. 89.) He says further, that he is of the opinion "that the almost total exclusion of cephalic version from the lying-in chamber for two and a quarter centuries has resulted in the loss to society of many a valuable life that otherwise might have been saved."—(A. M. MONTHLY, vol. 6, p. 90.) From page 95 of the above-mentioned volume of the MONTHLY we quote the following from Dr. Carey's paper: "*Cephalic version* is applicable to all those cases of deviations of the vertex, in which a reasonable hope is entertained of spontaneous delivery taking place, safely to the mother, if the head were the permanent presenting part. In transverse positions of the child, when the vertex is nearer the superior strait than the pelvic extremity, I think the operation commends itself to the careful consideration of the practitioner. It consists in carrying the presenting part—shoulders, arm, chest, or any other portion of the fœtus that may offer—upward and in an opposite direction to that at which the head of the child may be situated, and as the hand is withdrawn it is made to grasp the vertex, and place it in the most favorable position for delivery." Dr. Carey says further, "The advantages of cephalic over podalic version are simple and readily expressed. *It is safer to the child.* All the circumstances which complicate and render podalic version dangerous to the infant, are avoided by bringing back the head to its normal position at the superior strait. Violence to its person and shock to the nervous system of the fœtus are obviated. So, too, of the fatal compression of the umbilical cord by the detained head in the pelvic cavity of the mother. Security

to life should be paramount to all other considerations with the physician; and if cephalic version can be performed, the above consideration alone should nerve his arm, and inspire him with energy and perseverance to accomplish the delivery of the fœtus, in these cases, by the head." * * * "If the accoucheur has the power of *selecting his time* for changing transverse positions of the fœtus in utero, there certainly is not the least excuse for him, in not placing the vertex *in any position* which his inclinations or the necessities of the case demand." * * * "So long as the child is invested with the membranes containing the amniotic fluid, so long is it under the most perfect control of the skillful manipulator. This axiom requires no arguments for its demonstration. If, then, in this condition, a transverse position of the fœtus is discovered, and the passages are lubricated with the natural secretion, and dilated or dilatable, the practitioner is highly reprehensible in not attempting, at least, to restore the head to its original position. The barriers to his success are trivial, and when he has accomplished his purpose he guarantees to the child one additional chance out of every three for living, over version by the feet." We should be glad to make large quotations, but want of space forbids. We make but one more: "With a limited experience, I perhaps should not presume to call in question the propriety of an operation so generally condemned as is cephalic version; and yet it does appear to me that the objections by which it has been set aside are neither sustained by sound argument nor rational philosophy. All admit the superiority of the operation, and especially the security which it confers upon the child, when judiciously performed; and still most authors exclude it from the safe operations in obstetrics, on the score of *impracticability.* In my humble judgment, in the early stages of shoulder presentation, or transverse positions of the child, when the upper half of the body presents, if the membranes are still intact, or recently ruptured, and the uterus is pliant and yielding under gentle pressure, cephalic version is eminently practicable, and less hazardous to the life and well-being of the infant and mother than podalic version. If this be true, it certainly should be attempted in all cases of the above accidents, when circumstances warrant or demand a change in the position of the fœtus."

Thus it will be seen that cephalic version can be performed, and its attempt is advised by many judicious physicians both at home and abroad. For ourselves, we believe that if the physician should be so fortunate as to discover the shoulder presentation or cross-position of the fœtus, a few hours before the commencement of labor, or, if later, and while the uterine contractions were yet but feeble, his attempts at cephalic version would be far more likely to be crowned with success. When the waters have been for some time evacuated, and the uterus has contracted firmly upon the child, its accomplishment is much more difficult. Yet we confess we cannot see in what respect the difficulty or danger is greater, in passing the hand into the uterus, seizing the shoulder, and so lifting as to make the head describe a *third* of an arc, than in passing the hand and *arm* into the uterus, seizing the feet, and bringing down so as to make the head describe *two-thirds* of an arc.

Syphilis a Cause of Scrofula.—In the *Nashville Journal of Medicine and Surgery*, Dr. L. M. Wasson has an able article upon the above subject. The doctrines advocated are not altogether new, having been previously advanced by Vidal and others, yet the paper is none the less interesting. We make but

one quotation. "That syphilis is a cause of scrofula in the offspring, there can be no doubt, when we take into consideration the feeble organization of the new being; that it has in its incipiency been vitalized from an unhealthy semen, the production of unhealthy blood. The vitality and organization of the children of syphilitic parents are so weak and imperfect, that we know many are aborted before the seventh month of uterine gestation. Many others that come to their full term, perish within the first year, while others before puberty. The deglobulization of the blood during the syphilitic diathesis would seem more than probable, from the general appearance of the persons thus affected. In fact. Grassi is said, from analysis, to have shown the globules of the blood of syphilitic patients to be diminished, and the albumen increased. This inequality of the constituent parts of the blood impairs its nutrition, and of course thereby disqualifies it for the building up of a healthy system with a sound constitution. It also disqualifies it for the healthy reproduction of the species." Of our promise to make but one quotation we repent, and make a second. "Should the scrofulous diathesis be set up, I see no reason why it should not be handed down to the offspring from a syphilitic ancestry, as well as from an original scrofulous ancestry, who had never had the syphilitic taint of constitution. It seems to me that it can be, and I think pathologists will bear me out in the assertion, that it matters not what the primary and exciting cause may be, that tuberculosis is as equally transmissible when caused from cold, as when from a stanched atmosphere, confinement, bad diet, or from any other known and acknowledged cause. It is certainly not the exciting cause that makes it transmissible from ancestry to offspring, but the peculiar diathesis or constitution of the system of the ancestry who transmit it. Scrofula can never take hold of a vigorous constitution until it is first, by some means, prostrated, its vitality impaired and brought down to that standard that is well known and acknowledged to be favorable to tuberculosis. Syphilis is everywhere acknowledged to impair and depress the constitution, and to bring about a cachectic condition of the system. Then, in the absence of statistical data to substantiate the fact that syphilis is a most powerful and frequent cause of scrofula, I take it for granted, from the undeniable fact of its giving the system, in every particular, the scrofulous diathesis, that it is a most powerful and frequent cause of scrofula."

Abortion.—In the *Nashville Journal of Medicine and Surgery*, for August, Dr. John H. Morgan has an article upon the causes of, and means for, the production of abortion in the negro population. He believes that abortion is frequently accomplished among the blacks, as well as whites, and yet he believes there is no remedy that, when administered by the mouth, is *sure* to produce this result. He speaks of *tansy*, *rue*, *cotton-plant*, *ergot*, *camphor*, &c., as being occasionally used for the purpose of producing abortion. He has but little faith in these remedies, and says, "I will not say that it is impossible, but it is certainly very difficult to effect an abortion with medicines alone, in a stout, healthy and vigorous woman, with no local determinations. I do not believe that we have any specifics in medicine for any disease." He says further, "From what I can learn, camphor is employed more than any other agent as an abortive. The question has been put to me often, both by white and black, if camphor would not make a woman miscarry. With what success it is used, I do not know, but from the extent it is employed it must effect something. It

is employed extensively as a preventive of conception; those who have been accustomed to using it, say that they take it just before or after menstruation, in quantities sufficient to produce a little nervousness for two or three days; when it has this effect they consider themselves safe.

"I am cognizant of the fact that a good many women who are not fruitful after the first birth, use camphor freely, and I have frequently detected its use in this way by the effect on the secretions."

Not long ago we were called to a case of abortion; the ovum had been expelled, and the uterine contractions were severe and painful, and the womb was forced down upon the perineum. On inquiry, we ascertained that medicines had been taken for the purpose of procuring abortion—the articles given, it was said, were none other than madder and whiskey. Physicians generally have no confidence in the emmenagogue properties of the madder, yet we must confess that in this case the uterine contractions were strong, and the lady previously had robust health. She was supposed to be about six weeks advanced in the period of gestation, and under full doses of opium and the recumbent posture, she made a good recovery.

Hypnotism.—Hypnotism has not attracted much attention in this country, though our more excitable and visionary French neighbors have been repeatedly urging the subject upon our consideration. In the *Nashville Journal of Medicine and Surgery*, for August, Dr. W. H. Hancock has an article upon the subject, in which he details two experiments. He says, "The subject of my first experiment was a young lady, in good health, aged about seventeen years. She was seated in an easy-chair, and a spectacle-glass placed about ten inches from the eye, in the median line of vision. A candle was then placed in a position so as to be seen in the glass. When all was arranged, I directed her to look solely at the candle reflected in the glass, and in about six or eight minutes I discovered the telling effects of the experiment. Her eyes began to look very red, her countenance remained immovable, her respiration at the same time becoming difficult, with contraction of the ocular and palpebral muscles—a condition resembling catalepsy; the eyes at this time becoming perfectly closed—indeed, she was asleep." During this sleep, the subject was insensible to pain. Dr. Hancock repeated the experiment upon himself with like result.

Metallic Ligatures.—In the *American Medical Times* for August 11th, Dr. John Watson has a clinical lecture on *amputations*, in which the subject of metallic ligatures is incidentally discussed. As the subject of metallic ligatures is attracting a good deal of attention of late, we shall quote a passage or two. "A good deal is said, now-a-days, about silver sutures and silver ligatures, as if it were really a new thing. Here lies on this table a book, written three hundred and twenty-five years ago by John Rhodius, of Padua, on the use of metallic ligatures, published in the year 1639, in which he gives the authority of the ancients, as well as of the surgeons of the middle ages, for the use of these materials."

"The great use, gentlemen, of the metallic ligature is this: not that they are any better than silk, but because you can use a finer piece, and *the finer the suture the less the irritation.* If you use a very fine wire, you have more power than thread. I don't wish to be understood as disapproving of the silver ligature; it is a very good thing in its place; it is, in fact, an admirable thing in some operations, as, for example, in our friend Sims' operation. Its

great use in the treatment of vesico-vaginal fistula consists in the fact, that but exceedingly small holes are made in the mucous membrane, and hence there is no chance for the escape of the urine into the vagina, a circumstance which would be very apt to occur if an ordinary silk suture was made use of. In all such operations, then, the silver wire is by all odds the best; but this is not the case in the ordinary ligation of vessels. I would advise, in all these cases, the silk ligature, or if you prefer it, the common flax thread, although the former possesses more smoothness, is more round, and can be made stronger." Referring to the experiments of Mr. Jones upon the subject of ligatures, he says, "Mr. Jones made a great number of experiments, thirty or forty years ago, on various animals, to try the effects of the different kinds of ligature upon the vessels of each. He has demonstrated, as the result of these experiments, that a small *round silk thread is the true beau-ideal of a ligature.*"

MONTHLY SUMMARY OF FOREIGN MEDICAL LITERATURE.

By Dr. L. Elsberg.

I. MEDICAL PHYSICS AND CHEMISTRY.

1. *Means of Determining the Quality of Milk.* By Dr. H. Minchin. (Dublin Medical Press, August 8, 1860.)
2. *On the Adulteration of Cow's Milk and its Detection*—A Review. By Dr. H. Huppert. (Schmidt's Jahrbücher, CVII., pp. 286, September, 1860.)
3. *On the Determination of the Proportion of Solids in the Urine of Health and Disease.* By William Seller, M.D. (Edinburgh Medical Journal, August, 1860.)
4. *On the Method of Detecting the Presence, and Estimating the Quantity of Sugar in Diabetic Urine, by means of Concentrated Sulphuric Acid.* By James McGhie, M.D. (Glasgow Medical Journal, April, 1860.)
5. *The Amount of Water in the White and Gray Substance of the Brain, and its Relation to Cerebral Œdema.* By Marcé. (Schmidt's Jahrbücher, CVII., pp. 154, August, 1860.)
6. *On a New Form of Chloride of Sodium.* By M. Tusan. (Dublin Medical Press, August 8, 1860.)
7. *Substitute for Gutta Percha.* By Dr. Kirr. (Annales Méd. de la Flanare Occident, 1860.)

1. Reviewing the different modes of milk-testing suggested, aside from chemical analysis, (the principal being by means of, 1, the lactometer, or cream-test, of Sir Joseph Banks; 2, the hydrometer, or specific gravity test; 3, the lactoscope of M. Donné; and 4, the microscope,) Dr. Minchin shows that "an instrument which, in the hands of ordinary observers, will supply the means of determining approximately, or in a rough way, without much trouble, and in a short time, the comparative richness of milk, is still a desideratum." He concludes, "Many persons are able to judge pretty accurately as to the quality of milk,

by carefully observing the transparency which the fluid exhibited when poured in a thin film from one vessel to another; and it would appear that this property, which has already suggested the instrument of M. Donné, might be again turned to account in the construction of a more simple instrument, which would indicate definitely, and enable us to register numerically, the degree of transparency possessed by a given sample; and we should be thus in possession of a very efficient means of estimating the degree to which the milk had been diluted, or how far it fell short of the average quality.

"Such an instrument has lately been invented; the principle of its construction is extremely simple, and the experiments instituted with a view of testing its performance, several series of which have been repeated, appear to have been attended with the most satisfactory and encouraging results. The instrument is made of brass, in the form of a shallow, oblong vessel, capable of containing about an ounce of fluid; the depth of the vessel is made to increase gradually, by means of a slab of white enamel fixed in a gentle slope from one end to the other; this slab is graduated throughout its entire length. Upon this the milk is poured till the vessel is filled, and a cover of plate glass is then put on—this should be done by giving it a sliding motion, to exclude air-bubbles. When the vessel full of milk is thus covered, the degree of dilution possessed by the sample under examination is estimated by the number of degrees on the enamel which can be read through the glass cover; for the glass being in contact with the edge of the enamel plate at one end, and separated from it by a gradually increasing interval towards the other, the intervening stratum of milk is made to assume the form of a thin wedge. If the fluid under examination be of a rich quality, abounding in oily and caseous particles, it will possess such an amount of opacity that only a few degrees can be discovered on the subjacent enamel when the instrument is held opposite to the light; if, on the contrary, the specimen be of inferior quality, whether from innate poverty, or the admixture of water, the diminution of opacity thence resulting will be evinced by the enamel scale becoming visible through a deeper part of the fluid, or at a greater distance from the commencement of the scale; the degree of translucency, therefore, can be measured by the number of lines visible through the fluid." [The following simple test by which to judge of the qualities of *human milk*, given by COLOMBAT, is less extensively known than it deserves. He directs a drop to be placed on the finger-nail: if it adheres to it at first, and then spreads, without running, it is in the natural condition; in the contrary case it is not sufficiently consistent; while it is too thick if the drop adheres to the nail without spreading.—(Colombat de l'Isère, translated by Meigs, Phil., 1845.]

2. Dr. Huppert presents an elaborate report of the labors of E. H. v. Baumhauer, (Versl. en Mededeel. der K. Acad. van Wetensch. Afd. Natuurk., p. 145–188, 1858,) and C. Trommer, (Die Prüfung der Kuhmilch, 8, pp. 37. Berlin: G. Bosselmann, 1859.) The different modes of detecting adulterations, and testing for and estimating the various articles intermixed, are very clearly presented and practically illustrated. To enter into details would lead us beyond the limits of this *Summary*.

3. Dr. Seller offers some interesting observations on each of the two methods of estimating the quantity of solids in the urine, viz.: 1, by evaporation to dryness; and 2, by reference to the density. We quote:

"I lately extemporized an urinometer, on the plan of which a convenient instrument might, I think, be made. I took a small pipette, and having closed the lower aperture by the gas flame, I put a sufficient quantity of mercury into the interior to cause the instrument to sink perpendicularly below the level of the bulb. The pipette now floated, in pure water, perpendicularly with the water-line, nearly midway between the bulb and the upper extremity. I then fixed a thin slice of a common cork on the upper end, so as to form a small table on which weights might be laid. I also passed a wire with a slender point perpendicularly through the cork till it touched the surface of the water, to serve for an exact index to the height at which the instrument stood in the water. When this rude instrument was placed in a fluid denser than water, it rose, of course, throwing even a portion of the bulb above water; but, by placing weights on the little cork table, it was made to sink to the level at which the point of the wire grazed the surface of the water. Since by this means the same bulk of fluid is evidently always displaced, whatever be the density and whatever the temperature at the time, provided the weights on the little cork table are adjusted to keeping the point of the perpendicular wire just grazing the surface of the fluid, those weights will exactly indicate the difference between a given bulk of distilled water and the same bulk of any denser fluid. Whatever be the temperature at the time, the index for distilled water is shifted to answer for that temperature. If the bulk of fluid displaced by such an apparatus be not known, all that is requisite, for example, in the case of the urine, is to immerse the instrument in a fluid known to have a density of 1060, and to ascertain how many grains suffice to sink the point of the wire to the surface; and the product of this number divided by 60 will answer to the weight required for each degree between 1000 and 1060. Here there is no inequality of degrees. The sixtieth part of the difference between the weight of the volume of distilled water displaced, and the same volume of the standard fluid at 1060 equally displaced, corresponds to a degree. I find it convenient to use pieces of thin lead-wire in such experiments, owing to the facility with which these can be adjusted to any weight. Such an instrument, of course, is better suited to the study than to the sick-chamber.

"With respect to the determination of the proportion of solid matter in the urine by evaporation to dryness, it has long been manifest that the difficulty of the ordinary methods place them entirely beyond the reach of medical men for practical use. A mode, however, occurred to me some time ago, which I have repeatedly put to trial. This mode is, I think, susceptible of very great accuracy, and at very little cost of time. It must be confessed, nevertheless, that without due precautions, it may lead into very considerable errors. It is founded on so simple an observation as that common filtering paper readily takes up a large proportion of urine, and, under favorable circumstances, dries in no long time. The only considerable source of error is the difficulty of bringing back the paper to exactly the same hygrometric state in which it was at the beginning of the experiment. The paper is to be carefully weighed before being moistened, and weighed again with the same care after it has become dry—the difference in weight is the amount of the solid matter in the quantity of urine employed. For 1000 grains of urine, or rather for 1000 water-grain measures of urine, I have commonly used three sheets of filtering paper, cut each into

four pieces. The urine is poured into a well-dried basin, and each piece is moistened in succession, as far as it will bear without dripping; enough being left unwetted at its upper part to allow of a fold, by which it may be hung on a string or wire to dry. For this effect a few hours suffice. If the temperature and hygrometric state of the apartment can be kept uniform during the whole process, there is plainly no difficulty; if the drying be carried too far, there is an error of deficiency in the amount of the solids inferred; if the drying be insufficient, or if the apartment has declined in temperature, or its hygrometric state has become greater, there is an error of excess. It should be remembered that the paper, though apparently dry, readily absorbs moisture, owing not only to its original tendency, but to the deliquescent character of the solid matters contained in the urine."

4. Dr. McGhie has entirely modified Pettenkoffer's and Runge's tests. He says, "When concentrated sulphuric acid is added to an equal volume of diabetic urine, and heat applied to ebullition of the mixture, the following changes occur: First, the fluid becomes blackish, and soon passes into a state of inky blackness. As soon as ebullition commences, the mixture begins to froth up, and continues to be covered with a layer of froth so long as the boiling continues. This layer of froth also remains after the mixture is cooled. In no other kind of urine except the diabetic are these appearances manifested.

"After the boiling has been continued for a short time, besides the intense black color, when the fluid is closely examined there will be found a copious evolution of carbonaceous particles. The high specific gravity of the fluid in which these fine black particles are suspended, prevents their being deposited as a precipitate till it is largely diluted with water. In ordinary samples of diabetic urine a copious precipitate is speedily deposited on the addition of water. The precipitate should now be thoroughly washed on a weighed filter, till all the acid is removed, and nothing but the pure carbon remains on the filter. After being carefully dried and weighed, the excess of weight of the filter containing the carbon over the weight of the filter without the carbon, will give the amount of carbon contained in the sugar; and when this quantity is found it is easy to calculate the weight of the sugar. The dried precipitate on the filter will be found in the form of numerous small pieces of jet-black carbon, which may be collected, and, by combustion, will be dissipated in the form of gas, without leaving any solid residue."

5. *Etoc Demazy* having asserted that the anatomical cause of stupidity in the insane was œdema of the brain, Marcé determined "with all precautions" the amount of water at 100° C., and found:

	Man, (average.)	Lamb.	Calf.	Ox.	Rabbit.	Pheasant.	Owl.
In 100 parts gray substance,	80 parts water.	83.6	85.6	82.6	79.2	82.7	76.2
" " white "	70 "	70	69.8	63.7	64.3	76.9	66.7

According to this result the gray substance of the brain in man, as well as the lower animals, contains more water than the white.

He also examined whether the brain is able to take up more water than it already contains. He injected pure water into healthy brains, and determined the amount; then he macerated weighed pieces of brain for 24, 48 hours, and longer, in water, and weighed them again. He found that the pieces had absorbed 50 per cent. of their weight of water; *i. e.*, that 30 parts of solid sub-

stance corresponded no longer to 70 parts of water, but to 150. In confirmation, he found that brains with membranes infiltrated with serum contained more water, especially the gray substance, (f. i. 85 and 90 per cent.) than normal brains.

6. On opening a tightly fitting tin box, in which a quantity of salmon-roe paste had been kept for nearly three years, the organic matter was found covered by an efflorescence of acicular crystals, which consisted entirely of chloride of sodium. Solution and spontaneous evaporation caused the deposition in the ordinary or cubical form.

" The crystals, some of which are nearly half an inch long, appear to be rectangular prisms terminated by four-sided pyramids. They are beautifully clear, colorless, transparent, elastic, longitudinally and transversely striated, and many are bent or contorted in a manner similar to the native hydrated sulphate of lime, called selenite by mineralogists." "It is singular to remark that, at all events, as far as we know at present, the acicular varieties of the chlorides of potassium and of sodium are only developed in the presence of organic matter, just as the production of octahedral chloride of sodium appears to be due to the solution from which it crystallizes, containing urea. Since writing the foregoing I have observed an efflorescence of acicular chloride of sodium on an animal deposit which was sent me for analysis, and which had been originally mixed with a solution of common salt to prevent it undergoing putrefaction."

7. " When the bark of the Linden is boiled for some time in water it becomes soft, supple, and susceptible of taking all kinds of forms, which it preserves on becoming hard by cooling. This property it preserves after having been used, so that it can be used again for different purposes." If this proves true, the bark of the linden may be, to a certain extent, substituted for gutta percha.

II. ANATOMY AND PHYSIOLOGY.

9. *On the Normal Structure of the Liver.* By Prof. E. Wagner. (Archiv der Heilkunde, I., 3, 1860, p. 251–272.)
10. *The Vena Ophthalmo-meningea.* By Prof. Jos. Hyrtl. (Oesterreich. Zeitschrift für prakt. Heilkunde, V., 49, 1859.)
11. *On the Arteria Profunda Femoris.* By Dr. Johann Srb. Oesterr. Zeitsch. für prakt. Heilk., VI., 1860.)
12. *The Preservation of Corpses with Acetate of Alumina.* By Prof. Burow. (Deutsche Klinik, 8, 1860.)
13. *On Muscular Contractions from Mechanical Irritation in the Living Man.* By Dr. L. Auerbach. (Froriep's Notizen, III., No. 8, 1860.)
14. *Experimental Researches on Regeneration of Nerves separated from Nervous Centres.* By Drs. J. M. Philipeaux and A. Vulpian. (Gazette Médicale de Paris, August 11, 1860.)
15. *The Influence of the Curare Poison upon Nerves and Muscles.* By Drs. Wundt and Schelske. (Schmidt's Jahrbücher, CVII., No. 7, 1860.)
16. *On the Functions of the Cœliac and the Mesenteric Plexus.* By Prof. Budge. (Nova Acta Acad. cæs. Leop.-Car. Nat. Cur.. XIX., p. 257–284, 1860.)
17. *On the Pancreatic Secretion.* By M. Claude Bernard. (Medical Times and Gazette, August 25, 1860.)

9. The most important point in this real contribution to the knowledge of the intimate structure of the liver, is the demonstration that the hepatic cells are separated from the blood by *two* membranes, the capillary and a tunica propria. The former is easily recognized by the well-known oval nuclei, and the latter, the "basement membrane," (with the proof of the existence of which the author settles a much contested question,) is also distinguishable, according to him, by peculiar nuclei in its cells. They are best seen in infantile livers. They are mostly round, average $\frac{1}{400}$ of a line in diameter, have a sharp outline, have clear, slightly granular contents, and generally a distinct nucleolus.

10. The ophthalmo-meningeal vein has never before been described. On raising the anterior lobe of the brain, it may be seen on the side of the sella turcica in every case, without exception, according to the author. It is either single or double, extends from the fossa of Sylvius to the superior orbital fissure, and is generally of the thickness of a knitting-needle, varying from that to the size of a quill. On tracing it towards the orbit, it is found in most cases to empty into the spheno-parietal sinus on the under surface of the lesser wing of the sphenoid; in other cases, it passes the sinus and unites with the lachrymal vein; more seldom with the ophthalmo-facial that passes through the inferior orbital fissure; and more seldom still, crossing the rectus superior muscle, it unites with the vena ophth. cerebralis. In one exceptional case, it gathered the blood of the posterior ciliary veins.

In spontaneous or traumatic inflammation of the orbit and its contents, phlebitis may extend through this vein, directly to the pia mater.

11. Dr. Srb examined 100 bodies or 200 extremities with regard to the anatomical relations of the profunda femoris, *i. e.*, the "muscularis profunda" branch of the crural artery. Its chief branches are always laid down as, 1st, the *circumflexa fem. externa*, to the muscles on the anterior and external aspect of the thigh, with a *ram. descen.* to the extensores cruris; 2d, the *circumflexa fem. interna*, to the inner muscles; and 3d, the three *perforantes*, to the inner and posterior side of the thigh; and the author found this arrangement in 124 cases out of the 200 to exist: viz., In 42 bodies on both sides, 20 times on the right side, and 20 times on the left.

Independent origin of the circumflexa interna from the crural artery (so that the profunda fem. comprises only the circumflex externa and the perforantes) was found 41 times, viz., 7 times on both extremities, 14 times on the right, and 13 times on the left.

Independent origin of the circumflexa externa from the crural artery (reducing the profunda to the circumflexa interna and perforantes) was met with in 26 extremities, 3 times on both sides, and 10 times each on one side.

Independent origin of the perforantes by a common stem, and consequently reduction of the profunda to the two circumflexa, was found twice on the left side.

Independent origin of all three divisions of the profunda was found 7 times, viz., in a female subject, on both extremities; and three times on the right, and twice on the left side in males.

12. The solution of acetate of alumina (obtained either in the usual way of adding to a solution of alum one of acetate of lead, or according to the author better, by rubbing together 5 ounces of alum and $6\frac{2}{3}$ ounces of acetate of lead,

and then adding 32 ounces by weight of water,) is injected into the crural artery, until the vessels will take up no more, then into the trachea until the liquid flows in large quantity from the mouth, and finally into the bladder and the rectum until no more can be got in. The author relates some remarkable cases of preservation of bodies thus injected, and dried.

13. Dr. Auerbach demonstrated to the Medical Section of the Schlesische vaterländische Gesellschaft, at its session of 1860, three series of phenomena observed by him on striking muscles with a percussion hammer or the finger. The first embraces the instantaneous contraction of the whole muscle when its whole breadth is touched, or of the particular bundle or bundles of fibres struck, when the blow is longitudinally limited. The blow need be but slight, and its effect is apparent to the careful observer, both by sight and on the touch. This, Dr. A. regards, not the result of reflex action, nor of immediate muscular irritability, but as a *neuro-muscular* contraction. The second series is one of *idio-muscular* contraction. It can be distinctly seen and felt as a limited hardness or tumor arising from the contraction of the fibres touched, and generally having the form of the instrument used, viz., while the blunt edge of a knife causes a straight-lined rising or swelling, the touch with a ring causes a ring-form hardness, the square base of a hammer, a similarly-formed swelling, &c. The third result, observed from a blow, is a kind of *peristaltic* motion of the obliquely striped muscular fibres, giving the appearance of a wave rolling along the fibres of the muscle, from one end to the other and back again. Dr. A. demonstrated these interesting facts before the Section, especially on the biceps muscle of a blacksmith, who had a very muscular arm, and being affected with tuberculosis, was greatly reduced in fat. [Among the practical applications made of these observations, we only refer to the explanation of the benefits resulting from systematic blows on muscles as a means of inciting them to action, as employed in some species of medical gymnastics.]

14. The account of the researches not being entirely published, we shall most likely have occasion to refer to them again. As yet, their principal result seems to be the determination of the important fact that the alteration which the nervous tubes undergo when nerves are cut or resected, is limited mostly to the disappearance of the medullary substance, and that the re-establishment of the normal condition consists principally in reappearance of this substance. From this it follows that the altered condition is not a destruction, but a modification of these tubes, and that their return to the healthy physiological state is not a regeneration in the proper sense of the word, but simply a restoration.

15. I.—The state of the nerves after curare poisoning is not identical with death; excitability may, therefore, after lapse of more or less time, return, after even the most intense poisoning. II. In all cases of curare poisoning there is a stage in which reflex excitability is increased. III. The nerves of poisoned parts, in partial poisoning, are always able to continue reflex impressions for a long time after the cessation of their direct excitability. IV. The number of heart beats is increased after the poisoning. The action of the Vagus does not cease after the poisoning, but it shows an activity reverse to the normal; the nerve is tetanized, the cardial pulsations being rendered more frequent.

From the highly interesting facts established by the authors, it is evident that it has been an error to regard nerve-activity after curare poisoning completely abolished even in the terminal branches of the nerve; and that, therefore, the

experiments with curare cannot be brought to bear on the question of "irritability."

16. Numerous experiments of extirpation of the cœliac ganglia and the mesenteric ganglion were performed on rabbits. The animals generally died within twenty-four hours after the operation; in a few cases death did not occur till the third day. The effects of the operation, briefly reviewed, are—1, Softening of the fæces, so that frequently no consistent mass is found in the rectum, but only a completely soft mash; 2, increased motion of the bowel; 3, elimination of tough, glairy mucus and blood; 4, enlargement of the liver; 5, manifestation of pain and suffering, unless the splanchnic nerve had been previously cut.

17. After speaking of the various methods of collecting the produce of glands connected with the digestive apparatus and the modifications required in each case, Bernard refers to the fact that the chemical composition of the saliva is entirely independent of the general state of the animal's health, while the reverse is true of the pancreatic secretion; hence, when peritonitis, which so often attends operations on the abdominal viscera, occurs, it is impossible to obtain healthy pancreatic fluid; and hence the absolute necessity of establishing definite rules for the performance of these operations. Experiments on the pancreatic secretion must be performed while the digestive process is in full activity; and Bernard prefers the method adopted by Tiedemann and Gmelin, in operating on the dog, to all others.

EDITORIAL AND MISCELLANEOUS.

— The season has once more arrived for the opening of our medical schools. In this city, unusual preparations have been made, and all the Colleges are prepared to begin the Session of 1860–61 with an ardor never before witnessed. The preliminary courses which have been instituted in all, and which have finally become a necessary part of the academic instruction of the student, have fairly commenced. These lectures—introductory to the regular course, and extending through a month—are not exclusively given by members of the Faculty, but in many instances by aspirants to professional dignities, for the enunciation of new views or new thoughts, as well as by those whose delegated province it is to teach. They often are, then, more interesting and quite as instructive as those of the regular course. The special subjects taken up are generally such as the lecturers most delight in, and upon which they have observed much and studied much; consequently they enter upon them with pleasure, lecture with more verve, exhibit more originality, abandon themselves to their own personalities, and by their enthusiasm attract the student. This is the

secret of the successful lecturer, and for these reasons, the preliminary courses given, as they frequently are by the professors and the attachés of the school, upon favorite subjects, become quite as important to the student as the regular course, and we trust that they will continue to grow in favor, and that each school will attract to itself those young men whose ardor leads them to investigate for themselves any special subject, and that the students will show their estimate of this plan, by a rigid attendance upon them.

To show that our view of the subject has been anticipated by actual illustration, we have but to instance the subjects of the preliminary courses now given in this city.

At the New York Medical College special lectures are given on Hygiene and Prophylactic Medicine; Visceral Anatomy; Diseases of the Breast; Amputations; Dentition; Endosmose and Exosmose; Venereal Diseases and Operative Midwifery. At the College of Physicians and Surgeons, on Meteorology; Anatomy of the Brain; Organs of Special Sense and Venereal Diseases. And at the University Medical College, on Physiology; Practical Medicine; Poisons; Microscopic Anatomy and Venereal Diseases, all more or less illustrated at the various clinics which occur almost daily.

This enumeration shows a range of subjects which cannot fail to be attractive to the student.

The only change made in the Faculty of the College of Physicians and Surgeons is the resignation of Dr. George T. Elliott, of his Adjunct Professorship. The Faculty of the University remains unchanged.

At the New York Medical College there has been an entire reorganization; but two of the former Faculty remaining, while additional chairs have been created, so that now the Faculty numbers twelve.

An important step has been taken by this school, which, we hope, will speedily find imitators. A Hospital has been founded, and a portion of the College building set apart for this purpose. It is already in working order. Upon a recent visit to it, we were struck with the admirable arrangement of the larger room, devoted to this purpose, and would venture to predict a successful result to the project. The patrons of this new charity have happily called it "The Charity Hospital;" and we hope it will become the nucleus of an extensive institution, where clinical teaching in connection with this College will be one of its principal merits, as it now is one of its aims.

— The American Pharmaceutical Association held its Ninth Annual Session in this city, commencing September 11, and continuing four days. Many reports were read, which we shall notice when they appear in the published Transactions of the Association. A lengthy discussion took place upon the merits of the new Law for regulating the Sale of Poisons. The conclusion arrived at, that though faulty in many of its provisions, it was yet a step in the right direction, and many valuable suggestions were made by those who took part in the discussion, for remedying the objectionable portions of the law. A committee of three, to "mature a plan by which the objects (of the law) may appear to be best attainable," was appointed.

From this committee much is to be expected, for certainly they who are familiar with the merits of the subject, and for the guidance of whom the law was instituted, are best calculated to discover its shortcomings, to suggest the remedy or to provide a better substitute. The report of this committee will, therefore, be looked for with much anxiety by those who are impressed with the importance of this subject.

The Pharmaceutists of New York, at the close of the session, welcomed the members of the Association from other cities by a complimentary dinner, to which were invited several of the medical profession, including the President of the Academy, the President of the College of Physicians and Surgeons, and the members of the medical press, and several of the Professors of the Medical Colleges of this city.

Among the speakers who responded to the regular toasts of the evening were Dr. John Watson, Dr. Reese, Dr. Doremus, Dr. Gardner, Dr. Griscom. The occasion was one of much pleasure to all the guests.

— The length of the articles in this number has necessarily obliged us to defer to the next number several Reviews and Book Notices which we had expected to have included in our pages this month. Publishers must have patience with us. For the same reason that these papers have been deferred, we have curtailed both the *Summaries* which were prepared for this number. These will also be included in future numbers.

—A new journal, to be exclusively devoted to the subject of Materia Medica, is announced. It is to be called the "American Journal of Indigenous Materia Medica and Repertory of Medical Science." It is to be published monthly, by Messrs. B. Keith & Co. The first number will appear in November.

THE AMERICAN

MEDICAL MONTHLY

AND

NEW YORK REVIEW.

NOVEMBER, 1860.

ESSAYS, MONOGRAPHS, AND CASES.

Lectures on Displacements of the Uterus. By E. R. Peaslee, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in the New York Medical College. Session of 1859–60.

LECTURE VIII.

Gentlemen—Before proceeding to the main subject of this lecture—inversion of the uterus—I will briefly call your attention to the displacements of the cervix merely of the uterus. These may be anterior, posterior, or lateral, though the last are less common; and thus we find anteversion, anteflexion, retroversion, and retroflexion of the cervix alone. In other words, the cervix may be found either curved or abruptly bent either forward or backward, though the body of the uterus still remains in its normal position.

The most frequent cause of these displacements of the cervix, is a slight descent of the womb from any of the causes of prolapsus mentioned in the third lecture, (p. 434;) in which case the os is brought in contact with the posterior wall of the vagina, and the cervix for a time sustains the weight of the uterus, and thus yields to it, becoming either curved or bent. Hence, slenderness of the cervix be-

comes a predisposing cause of such displacements; as does also an extraordinary length of this part. You will very seldom find either of these displacements in case of a cervix the vaginal portion of which is not more than three-fourths of an inch long.

The causes of the first degree of prolapsus may therefore be the indirect causes of these displacements; the prolapsus inducing them, as before explained. In case of hypertrophy of the womb from previous inflammation—this organ being as large as in the fourth or fifth month of gestation—the cervix is almost always found to be bent like the neck of a retort.

Whether a given cause will produce mere curvature (version) or flexion of the cervix, will depend on its original power of resistance. If originally quite slender, flexion will be more probable than version. Whether anterior or posterior displacement will result, depends on a variety of circumstances. In case of married patients, posterior displacement is the more common, and sexual intercourse the probable determining cause. It is, however, mainly in cases of enlargement of the neck, with induration, that the latter cause produces this effect. In the unmarried, I have more frequently found the anterior displacements; the os sliding downward and forward on the posterior wall of the vagina.

The lateral displacements are more frequently due to the presence and pressure of an enlarged ovary, or some other pelvic tumor.

Developmental causes, also, though very seldom, induce these lateral displacements; one of the lateral halves of the cervix being perhaps longer or more slender than the other, and thus more disposed to yield to pressure. In an unmarried person, also, a prominent posterior lip of the os uteri may predispose to retroversion or retroflexion; and *vice versa*.

The symptoms of these displacements are not well marked, as they produce no decided suffering. Hence they are generally discovered on making a vaginal examination for another purpose, their existence not having been previously suspected. The malposition of the cervix is, however, at once detected, *per vaginam*, whether anterior, posterior, or lateral. The only difficulty will be found in deciding between versions or flexions of the neck merely, and those of the body of the uterus upon the neck, of which I have spoken in the two preceding lectures. If there be any doubt, however, the uterine sound will at once remove it.

The treatment, therefore, of these displacements, is generally a matter of slight importance. If they are the consequences of another path-

ological condition, however, as hypertrophy or prolapsus, they may spontaneously recover, on the removal of these conditions. In one respect, however, these malpositions may require treatment on their own account; I mean from the fact that they may become the cause of sterility. If the latter condition exist, and the displacement of the cervix persists, although the descent or the hypertrophy, or other producing cause has been removed, we may introduce an instrument through the canal of the cervix like the one described in the preceding Lecture, (Fig. 11, p. 284,) but with a stem one-half or three-fourths of an inch shorter, and let the patient wear it for a few weeks. Or we may dilate the canal of the cervix by the use of the sponge-tent, or of the hysterotome, as first advised by Dr. Simpson in case of contraction of the cervical canal. Dr. Meigs here, also, recommends a globe pessary. I should apprehend it would rather increase the difficulty.

In connection with these displacements, I may allude to extroversion, or eversion, of the os uteri, of which Madame Boivin gives an instance. The rugæ of the everted os may be mistaken for ulceration surrounding the os, were we not aware that this condition may occur. It, however, rarely, if ever, requires treatment.

Inversion of the Uterus.

In this displacement, the uterus is turned inside out; so that the fundus passes downward through the os uteri. There may, however, be different degrees of this displacement; though for practical purposes it may be sufficient to recognize only complete and partial inversion. Of course there can be but one degree of complete inversion. Mr. Newnham admits two degrees of partial inversion, and which he terms depression and partial inversion. Mr. Crosse* admits three degrees of partial inversion, viz., depression, introversion, and perversion. Depression, the slightest degree of inversion, implies that the fundus uteri, in its entire thickness, has become convex towards the cavity of the uterus, or indented above; in introversion the fundus has become depressed into the cavity of the uterus, so as to be received by the latter; while in perversion, the fundus projects through the os tincæ. Mad. Boivin and Dugès admit three degrees of partial inversion, viz.: depression, introversion and perversion; and inversion of the body and cervix, *i. e.*, all except the os uteri. In *complete* inversion, the uterus is turned completely inside out; its lining membrane now covering it ex-

* An Essay, Literary and Practical, on Inversio Uteri. London, 1845.

ternally, while the peritoneum formerly covering it, becomes the lining membrane of a new cavity continuous with the peritoneal cavity above; and which is occupied by the ovaries and Fallopian tubes, and possibly also some portion of the small intestine. (Figs. 12 and 13.) In some cases the os uteri alone still remains in place, (*i. e.*, uninverted,) presenting a firm ring around the upper part of the tumor. The vagina is often, but not always completely inverted, when the uterus is so.

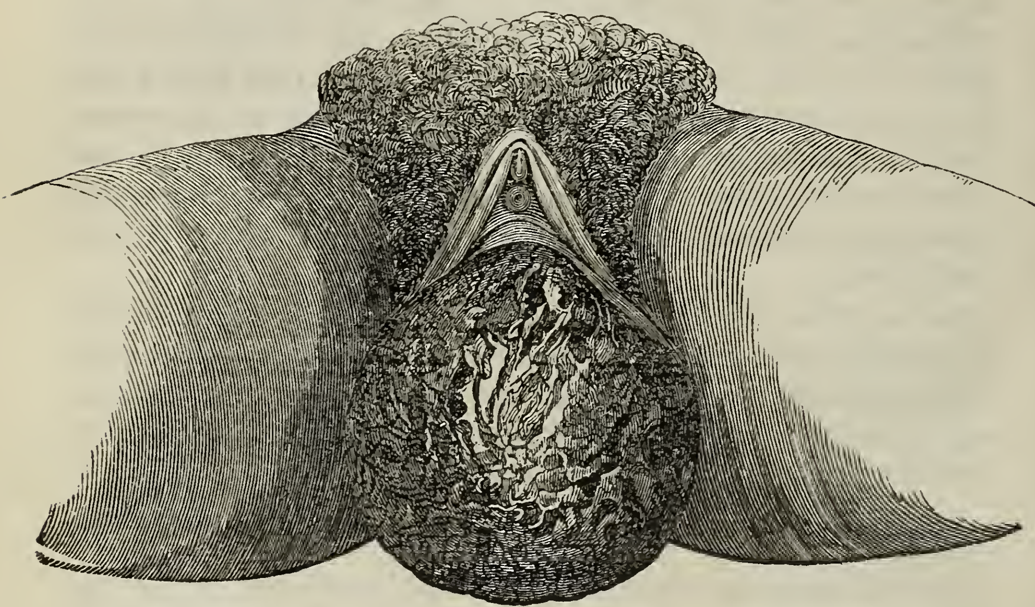


Fig. 12.

Complete recent inversion of the uterus. Here the vagina is not inverted.

The following tabular arrangement presents the degrees I have mentioned of partial inversion:

	Newnham.	Crosse.	Boivin.
Partial Inversion.	1. Depression.	1. Depression.	1. Depression.
	2. Partial Inversion.	2. Introversion. 3. Perversion.	2. Second Degree.
			3. Body and Cervix inverted.

Inversion of the uterus generally occurs immediately after the fœtus is expelled from the uterus, whether parturition occur at term or prematurely; and most frequently while the placenta still adheres to its surface. The earliest period of gestation, at which I remember it to have occurred, is at the end of the fourth month.*

* See, also, a case reported by Dr. E. W. Woodson in the *American Journal of Medical Sciences*, for October, 1860, p. 411.

Inversion has, however, been known to occur a few hours, and even days, after parturition at full term; depression having been probably produced at the time of, or soon after, the expulsion of the fœtus, and the other degrees having been gradually induced afterwards. In a case reported by Sabatier this accident occurred ten days; and in one reported by Baudelocque, it occurred thirteen days, after parturition. In the latter case depression at least was probably produced on the third day, by the patient rising from her bed.

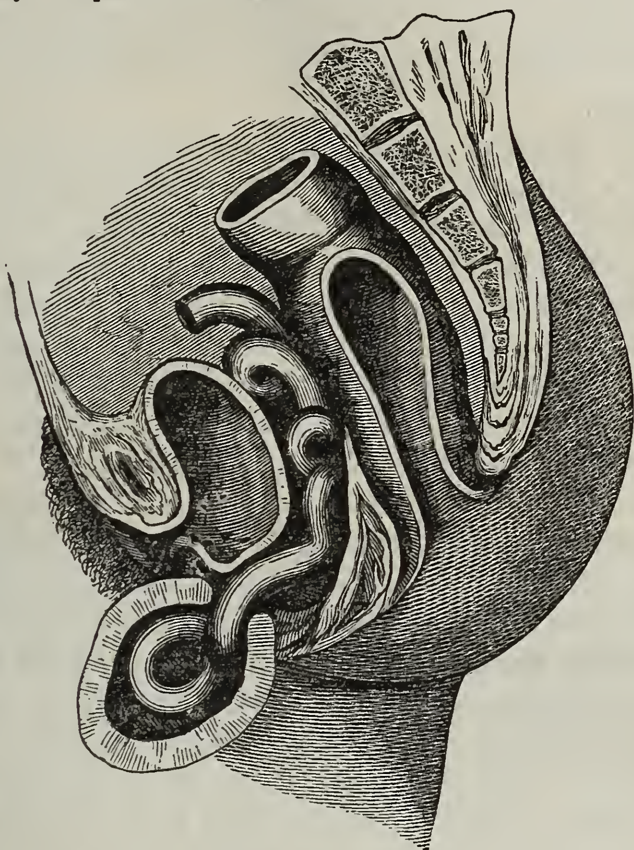


Fig. 13.

Complete inversio uteri—lateral view. A loop of intestine is seen in the cavity formed by the inverted organ.

But may not a non-gravid uterus also become inverted? Some writers think not. I should, however, not hesitate to decide with those who believe that a uterine polypus attached to the fundus uteri may also gradually produce this displacement. In practice, therefore, we have three classes of cases; and which I shall consider in the following order:

1. Those which have just occurred—recent inversion.

2. Chronic inversion; cases which occurred in connection with parturition some considerable time since—inversion of long standing.

3. Inversion produced by a polypus or other intra-uterine tumor.

I. Recent Inversion of the Uterus.

By *recent* inversion, I mean those cases to which we may be called any time within the first few days after the inversion occurs—it still remaining unreduced. Mr. Radford terms these cases of *acute* inversion.* As we have seen that this accident may occur any time within ten or even thirteen days after parturition, I find some excuse for limiting recent cases to two weeks' duration, though this is merely an arbitrary limit. If the case has existed much longer than this, the symptoms change and the case becomes one of chronic inversion, as Dr. Radford terms it; though I prefer the expression—inversion of long standing.

Causes of Inversion, connected with Parturition.—The *predisposing* causes are, a previous inversion after labor; a constitutional predisposition to laxity of muscular fibre, (Meissner;) atony of the uterus in connection with a large pelvis, (Siebold;) complete atony of the uterus immediately after the expulsion of the fœtus; a polypus attached to the fundus uteri; and preternatural shortness of the umbilical cord, or its arrangement in coils around the neck of the fœtus. Very seldom, however, has this cause any decided influence;† and the cord is often ruptured by traction without producing inversion.

The following *direct* causes may be mentioned: A very prompt delivery, (implying powerful contractions of the uterus,) especially if it occur while the patient is standing or rising from stool; rash pressure downward of the fundus uteri by the hand applied over the hypogastrium; powerful straining efforts of the patient after the fœtus is expelled; and all causes of irregular uterine contraction. But, doubtless, the most common cause is careless traction upon the cord, in order to remove the placenta after the fœtus is expelled.‡ Still, it should be added, that inversion may occur under the most judicious management. If the uterus be in a state of atony for a time after the fœtus is expelled, we may easily conceive that if an irregular contraction should take place, it might cause a depression of the fundus at first; and this may finally become a complete inversion, independently of any error on the part of the practitioner. Henkel thinks that violent after-pains may produce inversion, which is only another method of expressing the same hypothesis. Spontaneous inversion, so

* Dublin Journal, September and November, 1837.

† Though the cord may be but six to eight inches long, inversion very seldom results.

‡ This was the *known* cause in 46 cases out of 148 compiled by Dr. C. A. Lee, in *American Journal of Med. Sciences*, Oct., 1860, p. 344.

called, is often, however, the final result of some improper manipulations at the time of delivery, as we have already seen.*

Symptoms of Recent Inversion.—If the inversion be *complete*, the following grave, rational signs present themselves. The patient suddenly becomes exhausted and deadly pale, even though there be no hæmorrhage. Generally, however, but not always, profuse flooding occurs, provided the placenta is detached. It is, however, far more frequently attached when the uterus is inverted. The pulse becomes small and rapid, and the voice weak, and nausea and vomiting usually supervene. If hæmorrhage attends, syncope soon follows, and in some cases, death ensues almost immediately. On the other hand, if the patient rallies, she does so almost as slowly if there has not, as if there has been hæmorrhage; the shock to the nervous system being the main source of immediate danger. Violent uterine contractions accompany, and also sometimes succeed, the displacement.

Such symptoms should at once induce you to make a thorough local examination. A large tumor will be found hanging from the vulva, larger than the contracted womb should be;† at first, flaccid, and sometimes extending half way to the knees; but anon, becoming rigid, from the supervention of contractions. This is the completely inverted uterus. If the vagina is also completely inverted, (as it usually is not,) there will be a firm constriction towards the top of the mass, (the os uteri,) and the portion above this is the inverted vagina. The cavity formed by the inverted uterus, and which is, of course, continuous with the peritoneal cavity, contains the ovaries and Fallopian tubes in all cases, and sometimes, also, portions of the small intestines, of the bladder, and the rectum. Thus, the size of the tumor will vary much, according as it does or does not contain the latter viscera. It is of course larger also, if the *placenta* is still attached.

On inspecting the protruded mass, it presents a rough, fungous-looking, bleeding surface, (if the placenta is detached,) and we can distinguish the orifices of the uterine sinuses. The mass is spheroidal or ovoid, and larger above than below, and is sensitive to the touch; and should, of course, be at once recognized if the placenta is still attached. On attempting to examine *per vaginam*, the latter may be found to be completely inverted. If not, the finger passes only a short distance into that canal, and can be carried completely around the upper

* Twenty-three cases of spontaneous inversion occurred in one hundred and forty-eight cases reported by Dr. C. A. Lee, *ut supra*, p. 345.

† Ruysch made a drawing of an inverted uterus which was six inches in all its diameters.

end of the tumor without finding the os uteri. Examining *per rectum*, also, the uterus is not found in its place. And finally, search being made for it by palpation over the hypogastrium, it is thus found to be absent from the position it should occupy immediately after parturition.

If the inversion be *partial*, the rational symptoms will be less pronounced proportionally to the degree of the displacement, and some of them will be entirely wanting. If mere depression exists, we may merely recognize a cup-shaped depression in the fundus on applying the hand to the hypogastrium. In introversion, this would be still more marked. In perversion, the fundus might not be reached at all by this manipulation, and there would be graver accompanying symptoms. But a vaginal examination would discover the fundus projecting more or less through the os, into the vagina, it being encircled as by a firm ring, by the os above. But even if the whole uterus except the os be inverted, the tumor may still be so small as to be retained in the vagina, since, unless there be complete inversion, nothing but the ovaries and Fallopian tubes, and not the whole of these, is contained in the cavity formed by the inverted organ; and in this case, the tumor in the vagina has been mistaken for the breech of a second child.

In regard to the comparative frequency of complete and partial inversion, I should add that most writers regard the former as comparatively quite rare. It is my own opinion, that of those cases occurring at once after the fœtus is expelled, the greater number are cases of complete inversion; while those occurring subsequently, are mostly cases of partial inversion.*

Prognosis of Recent Inversion.—Inversion is a fearful accident, unless treated at once, and the uterus reposited. But if judiciously and promptly treated, it is not usually fatal. There is, however, danger of a relapse for several days after, even to the 10th, (Leblanc;) and after a subsequent delivery. If overlooked or maltreated, it may prove suddenly fatal, (in one or two hours,) or death may occur a few days subsequently, from pain and exhaustion, syncope, or convulsions.

On the other hand, if the patient survives an unreduced inversion for two or three weeks, she may probably for months or years, though still a great sufferer. Repeated and almost unintermitting hæmorrhage, however, generally limits the life of the patient to two or three

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* Of 126 cases, 108 were complete. Dr. C. A. Lee, *ut sup.*, p. 345. But Dr. Lee also includes the third degree of partial inversion of Mad. Boivin, (p. 324,) under the head of complete inversion.

years after the accident, (Boivin and Dugès, p. 123.) Some, however, after a few months or years, experience but comparatively little inconvenience from this accident. At the end of from three to six months, the uterus will have been reduced to nearly its normal size, and will frequently no longer protrude from the vulva; and if not, life is prolonged with much less discomfort. Levret and Delamotte were consulted by patients who had had inversion of the uterus twenty and thirty years, respectively. And Levret mentions the case of a woman seventy years of age, who had a complete inversion of the womb and vagina, and, of course, the mass was entirely external—which contained a portion of the rectum, of the bladder, and of the small intestine, besides the ovaries and Fallopian tubes.

Complications of Recent Inversion.—Distention of the bladder and subsequent inflammation may be expected, if not guarded against, as complications. Sometimes, also, the uterus, if unreduced, becomes strangulated, and finally sloughs off; and in a few instances, the patient has survived even this result. Inflammation soon supervenes of the displaced organ in all cases; and this must, in cases where treatment has been delayed for a short time, be removed before reposition is attempted.

Diagnosis of Recent Inversion.—It might be supposed that the diagnosis of recent inversion, when complete, presents no difficulty; but it has, in practice, often been found otherwise. The sooner after the accident occurs, however, the easier the diagnosis.

1. From a *polypus*, complete recent inversion is distinguished by its rough, bleeding, and sensitive surface, and its form, (larger above than below,*) and the greater immobility of the tumor. In polypus also the os encircles the tumor; not so in inversion when complete.

2. From *prolapsus*, inversion is distinguished by the absence of the mouth of the uterus at the lower part of the tumor, as well as by the blood-red and bleeding surface presented.

3. From *prolapsus of the vagina*, by its rough bloody surface, and firmness, and difficulty of reduction.

The history of the case in either prolapsus or polypus will also, of course, be inconsistent with the idea of recent inversion. Moreover, the absence of the uterus from its normal position in the hypogastrium, and the placenta also, if attached, will distinguish inversion from all the preceding; and in polypus and prolapse of the vagina, the finger may be passed above the tumor into the vagina.

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* Very rarely, however, the upper end of the tumor is the smaller in inversion.

Partial recent inversion (in the third degree, or perversion,) may be mistaken for (1) polypus. But here, again, the tumor is sensitive, while polypus is not; the surface is rough and bleeding—that of polypus is polished and smooth. Sometimes, however, the inverted uterus, whatever the degree of inversion, is not decidedly sensitive. (2.) It may also be mistaken for *prolapsus;* but here, again, the surface of the latter is smooth, and the os uteri at the lower extremity of the tumor.

The diagnosis of the first degree of recent inversion (depression and introversion) is made out especially by searching for the fundus uteri by palpation of the abdomen above the pubes.

Treatment of Recent Inversion.—Evidently the first thing to be done in a case of recent inversion, whether complete or partial, is to return the uterus to its normal position as promptly as possible. A delay of a few minutes may be fatal to the patient, and the difficulty of reposition is also much enhanced as the time passes. Denman thought the lapse of four or five hours might render the reposition impossible. This is, however, a mistake, as will appear further on.

If present, therefore, when the displacement occurs, we should not lose a minute before attempting to restore the uterus to its normal position. There is, however, an important practical question to be settled in each case, provided the placenta is still adherent, (and it is so in a majority of cases,) viz.: Shall the placenta be detached before the attempt is made to reposit the womb?

Blundell, Burns, Clark, Carus, Denman, Gooch, Newnham, and others are opposed to the removal of the placenta before attempting the reduction; though Denman and Carus advise to complete the detachment, if it be already partially detached.* On the other hand, Baudelocque, Boivin, Capuron, Gardien, Radford, Meigs and others, advise previously to detach the placenta. Obviously the reduction will be greatly facilitated by its previous removal, and in this way we also avoid any trouble from it subsequently to the reposition; but those who would return it with the uterus are deterred from detaching it by the risk of hæmorrhage. Dr. Radford has, however, shown that this risk has been overestimated. Avoiding all discussion, I should say, that our practice, in case the placenta is still adherent, may be safely based on the three following precepts:

1. If the placenta is partially detached, complete the detachment before attempting the reposition.

2. If the placenta is adherent, and you are present at the moment

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* Churchill's Diseases of Women, p. 282.

when the inversion occurs, attempt to replace the uterus at once, without detaching the placenta. You would generally succeed at once, and the placenta will be expelled by the uterine contractions afterwards.

3. If not called till an hour or more has elapsed, or until the uterus has become rigid, detach the placenta before attempting to replace the womb.

To effect the reposition, the patient should be placed on the back, with the pelvis higher than the shoulders; and if the uterus has become rigid, it will be necessary to administer an anæsthetic. In case of a few hours' delay, the bladder and rectum should also be previously evacuated. In respect to the manipulations to be resorted to, different directions are given by different writers. But first apply oil or glycerine to the hands. Mr. Newnham advises to attempt to replace first the portion of the mass which last descended, and therefore to commence at the upper part of the tumor. Some advise to compress the whole mass between the two hands, to diminish its size, and then to force the mass upward, and thus effect reposition. I should compress the tumor in this way only in case it contained portions of intestine, and for the purpose of forcing them back into the peritoneal cavity before reposition is attempted.

I should endorse the practice of those who first apply the end of a single finger to the lower extremity of the tumor with the intention of indenting it like the bottom of a bottle, by forcing it upward, and then other fingers, and finally, the whole hand, when the indentation becomes sufficient to receive the latter. It will generally require a firm, continuous pressure, for several minutes before the lower part of the tumor yields at all; and when at length it does so, and the whole hand is applied in its turn, we must expect to meet with resistance again, when the inverted fundus is raised to the level of, and before it is returned through the os. A steady pressure will, however, at last overcome this, and the uterus is then at once replaced; the fundus sometimes starting from the hand, at last, like an elastic bottle when turned wrong side out. The hand must, however, (now within the uterus,) be carried as high as possible, to make it certain that no depression of the fundus remains. It should also be retained in the cavity of the uterus until expelled by the contractions of the latter; since otherwise, the first contractions may reproduce the inversion.

We must, however, know when to attempt this manipulation. And Dr. Meigs has decided this point. He observed that after-pains (*i. e.*, contractions,) occur in the inverted uterus, as after parturition under normal circumstances. During them, of course,

the uterus becomes rigid and firm, but the contraction ceasing, it again becomes flaccid. It is only when in the flaccid condition, of course, that we are to attempt the manipulation just described. If we find the uterus rigid, therefore, we have only to wait until relaxation ensues.

Since, however, continued pressure with the finger becomes at length quite fatiguing and painful, we may use with the same result a piece of cork an inch in diameter, (a cork stopper, for instance,) made convex at its extremity and attached to a piece of whalebone or wood of sufficient firmness, instead of the finger; and when the tumor becomes indented below by the pressure thus applied, the hand can be used in turn.

If reduction is found to be impossible by the preceding process, and the principal resistance is afforded by the os uteri, it may be proper to divide the latter. Belladonna ointment may be previously applied, as recommended by Chaussier. If the uterus is inflamed when we first see the case, the inflamation should be diminished by bleeding, the application of leeches, &c., as may be required, before attempting the reduction.

If all the preceding means fail, I should still be disposed to vary and repeat the procedure, since I think that but very few cases of recent inversion should be abandoned as irreducible. A few cases of partial, recent inversion have been spontaneously reduced; but we have no right to expect this termination in any given case.

After the reduction has been effected, a recurrence of the accident is best prevented by keeping the patient longer than usual, after confinement, in a recumbent position. I have said nothing of brandy and ammonia, or other stimulants which the patient may require, according to her condition, before commencing or during the reduction.

II. Inversion of Long Standing.

Under this head I include those cases of inversion of the uterus which have been either overlooked at the time of their occurrence, or at any rate, have remained for several weeks or months unreduced. In order to specify a definite period, I have restricted recent inversion to within two weeks after its occurrence; and accordingly, any case of longer duration than this is included under the present head. Neglected cases have, however, generally existed for several months, or even years, before we are consulted in regard to them; the uterus meantime having returned to nearly its original size; and such cases will be kept more especially in mind in what I have to say in this connection.

The *causes* of long-standing inversion are, of course, the same as of

the recent accident, (p. 326,) the latter becoming the former. The gradual dragging of a uterine tumor may, however, also be a cause of the former.

Signs of Inversion of Long Standing.—The signs of recent *complete* inversion (p. 327) merge gradually into those of the chronic cases. But after some months, even, the hæmorrhage may continue as a constant menorrhagia; or a profuse, constant mucous discharge may replace it. Subsequently, the epithelium may become dry from constant exposure to the air; or the surface of the tumor may become covered with ulcerations. Once a month, however, in either case, the surface becomes for a few days covered with blood—*i. e.*, the catamenial fluid —except in those who have ceased to menstruate. But this class of patients, since they avoid the monthly congestion of the uterus, generally have the organ become smaller and permanently dry on its surface, and less sensitive, and may at last suffer very little from the displacement. Irritation of the bladder and constipation are also constant symptoms of this condition. Constitutional symptoms soon supervene in most cases; and anæmia, hectic, and often dropsical effusions, hasten the fatal result. Some maintain that the average duration of a complete inversion, before producing fatal effects, is from two to three years, though there are many exceptions to this proposition, (p. 329.)

On making a *vaginal* examination, if the inversion be complete, we find a tumor sometimes projecting from the vulva, and sometimes contained within the vagina, of an ovoid form, about the size of a hen's egg, or larger, somewhat sensitive, generally rough, but sometimes smooth, sometimes moist, and at others dry, and its surface surrounded at its upper extremity by a mere *cul-de-sac* of the vagina. It may possibly be mistaken for other conditions, however; and which will be discriminated under the head of the diagnosis.

If the inversion of long standing be only *partial*, the preceding signs will be less marked in proportion to the degree of displacement; and from the first two degrees very little inconvenience is at last usually felt.

Prognosis of Chronic Inversion.—I have nothing here to add to what I have said under this head on page 328.

I should, however, not omit to state the opinion of some eminent authorities, that inversion of long standing is sometimes spontaneously reduced. Dr. Meigs mentions two cases of this kind, in one of which reposition occurred after eight months, and in the other after eight

years.* I have no doubt that cases of partial inversion of long standing (of depression, introversion, and possibly also of perversion,) have after a long duration been spontaneously reduced. But from the proposition that a complete inversion can be thus remedied, I must withhold my belief. I can form no conception as to where the nisus could first be brought to bear upon the displaced organ. But if any part, even the os alone, remain uninverted, I can conceive of the possibility of a very gradual, but finally complete, reposition.

Of the complications of long-standing inversion also, I have nothing to add to my former remarks, page 329.

Diagnosis of Chronic Inversion.—This is a subject of the utmost practical importance, and many mistakes have resulted from the want of a precise knowledge of it.

From both *prolapsus* and *polypus uteri*, and from *prolapsus vaginæ*, chronic inversion is distinguished by the oozing of blood once a month (except in those who have ceased to menstruate) upon the surface of the latter. It is also usually sensitive, unlike polypus, and has not the os uteri at its lower extremity like prolapsus. In size it seldom exceeds the large extremity of a hen's egg, while polypus is of indefinite dimensions. From prolapsus of the vagina it is also distinguished by its greater firmness, and its difficulty of reduction, which latter also again distinguishes it from prolapsus uteri.

Examining *per vaginam* in prolapsus uteri, we feel the os at the lower part of the tumor; in polypus we feel the os encircling the latter; in complete inversion the finger reaches only the cul-de-sac of the vagina at the upper end of the tumor. In the two first the tumor is smooth; in the last it is rougher. In prolapsus vaginæ the finger at once isolates the tumor from all connection with the uterus itself.

In case of *partial* inversion, especially perversion, the diagnosis may be very difficult. If, however, a catheter being passed into the patient's bladder, and an index finger in the rectum, the finger can be made to feel the catheter, through the walls of the rectum and the bladder—the body of the uterus does not of course intervene between these organs, and either complete inversion or perversion exists.

The distinction between introversion (or perversion) and polypus uteri is sometimes at once made by the use of the uterine sound. In the latter it passes on one side of the tumor only to the normal distance into the uterine cavity; in the former it passes to an equal, but too slight a distance on all sides of the tumor. The history of the case

* Woman and her Diseases, pp. 253–4.

will also generally lead to a safe practical inference on this point. The attachment also to the uterine cavity of a polypus is usually slender; while in introversion or perversion the upper part of the tumor is broad.

Treatment of Inversion of Long Standing.—Some writers regard a chronic inversion as irreducible from the very nature of the case, and therefore merely attempt to palliate the symptoms by rest, the use of styptics, vaginal injections, &c., as the circumstances may require; also returning the uterus (if protruding externally) into the vagina, and retaining it there by means of a T bandage. Dr. Meigs, though admitting that inversion is sometimes spontaneously reduced, (as we have seen, p. 334,) regards reposition as impossible by any operative interference,* and advises merely to have patience, and hope for the best.† But I think a more encouraging view may be taken of this class of cases. Mr. Gurney reports a case of reposition at the end of five months; Mad. Boivin of fifteen months; and Mr. Valentine of sixteen months.‡ Dr. Tyler Smith, of London, reposited a uterus which had been inverted twelve years even; and Prof. White, of Buffalo, succeeded in a case of sixteen years' duration.

We are therefore not to regard a case of inversion as irreducible, simply because it has existed for several months or years. The first question therefore is, whether an attempt shall be made to reduce the organ or not.

Without delaying to specify all the circumstances in which reduction should not be attempted, the fact of the patient having ceased to menstruate, or that she suffers but little inconvenience from the displacement, might naturally induce us to hesitate. But on the other hand, if she has not passed the child-bearing period, and has no inflammation, or other complication, and is constantly a great sufferer, I should say the presumption is, that the attempt to replace the uterus is justifiable.

The operation of reduction is essentially the same as before explained for recent inversion, (p. 331,) except that here time can always be taken to make every preparation for the reduction; and an anæsthetic should, of course, be administered previously. The patient is to be placed in the same position as before specified; and pressure is to be made for a long time at the bottom of the tumor, with the finger, or a proper instrument. If the first attempt fails also, it should be repeated at another time. It may be proper to keep up the pressure for hours; pressure being also at the same time applied deeply

* Page 246. † Page 250. ‡ Churchill, p. 384.

over the hypogastrium, to prevent the mass, as a whole, from being carried upward. And after the reduction, should it be effected, rest, and the appropriate treatment to prevent inflammation, should be resorted to.

But if, after repeated attempts, or for any other reasons, we feel obliged to regard the case as irreducible, the question next presents itself, of removal of the inverted organ; and this is accomplished by ligature or excision.

From the fact that the patient may recover when the uterus becomes strangulated, and sloughs off in cases of inversion, we should infer that its removal by the surgeon might not prove fatal. We should, however, suppose it would be a safer practice in those who have ceased to menstruate, and this is also a fact to be taken into consideration. But it has often been successfully performed on younger patients. Churchill alone gives the names of nearly thirty practitioners who have successfully performed it.* Mad. Boivin, however, with some other writers, has doubts on this subject, and shows that in many successful cases it was a hollow polypus, and not the womb, that was successfully removed.† But the presence of the ovaries in the part removed, in many cases, leaves no doubt of the success in many instances of the operation in question.

The inverted uterus is best removed by ligature, and sometimes by excision; or the mass may be removed by excision immediately after the ligature is applied. The ligature may be of silver wire, or a thread of silk or linen. I should prefer a thread to the wire, since the former aids the process of ulceration, and thus the mass becomes sooner detached. The ligature should be passed double through the centre of the base of the tumor, and one of its portions should be tied round each half of the latter. Intense pain, nausea and vomiting, and nervous shock usually follow the tightening of the ligature; and if the symptoms become too intense, it should be loosened for a few hours, and then tightened again. Opiates, in decided doses, and stimulants will be required to support the patient's strength until the mass has separated.

III. Inversion of the Uterus from Polypus.

Lastly, we have to consider inversion gradually induced by polypus uteri. Some reject the idea that polypus can produce inversion of the womb, and assert that in the cases in which this was believed to be the fact, the inversion actually occurred in connection with parturition,

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* Diseases of Women, p. 385. † Boivin and Dugès, p. 130.

the polypus also existing at that time; and remind us of the case of Levret, in which it was entirely overlooked for five years after its occurrence. It is, however, safe to assume, with Meigs and other writers, that a distended and softened condition of the uterus is always requisite to the occurrence of inversion, and therefore the polypus must be of considerable dimensions before it can produce this effect. Of the possibility, however, of such a result, entirely independent of parturition, there should no longer be any doubt. Churchill has given the particulars of one case, and referred to three others, in his work on the Diseases of Women.* The polypus being attached to the fundus, produces at first mere depression, then introversion, and perversion after descending through the os uteri.

The rational *signs* of inversion produced in this way are essentially the same as those of inversion of long standing, mentioned on page 333. The inversion may also be either complete or partial. The main difficulty on inspection, or on making a vaginal examination, will be to distinguish the real nature of the case from the other conditions mentioned under the next head. The prognosis is also essentially the same as indicated on pages 328 and 334.

Diagnosis of Inversion from Uterine Polypus.—As we here have *inversion with the polypus*, the main difficulty will be found in distinguishing this condition from mere inversion, and from polypus merely. I shall therefore confine my remarks to these points, and refer for the diagnostic symptoms of simple inversion to page 334.

In the present class of cases the displaced mass, of course, consists of two portions—1, the polypus; and 2, more or less of the uterus. There is generally a constriction between the polypus and the uterus; but at any rate the polypus is not sensitive under pressure, while the uterus is almost invariably so. The polypus is also, in these cases, of considerable size; so that the whole mass is much larger than the inverted uterus alone can be in cases of chronic inversion. The attachment of the tumor to the uterus is usually broad.

But on the other hand, the case may be mistaken for polypus merely. This is prevented by passing the uterine sound up to and into the os uteri. If the inversion is complete, of course no os uteri is to be found; if partial, the sound passes to an equal, but too slight a distance on all sides. Besides, if the catheter be passed into the bladder and the finger into the rectum, as stated on p. 334, the uterus will, in case of inversion, be found not to be in its place.

* Philadelphia Edition, p. 375.

Treatment of Inversion from Polypus.—The polypus should first be removed by ligature, or by excision, as may be deemed best. I should generally prefer the latter. Then an attempt may be made to reduce the inverted organ; for it is quite too much to expect that it will return spontaneously, as asserted by Dr. Meigs, in any specified time. Failing in this, the question of removol of the uterus arises. But since the treatment of this class of cases, after the polypus is removed, is identical with that of the cases of long standing, which have been considered, I shall refer to what I have said on page 335; and in closing my remarks on this subject, I conclude what I had intended to say upon the several displacements of the uterus.

The Physiology of the Circulation. A Course of Lectures delivered in the College of Physicians and Surgeons, New York, in the Fall Term of 1859. By JOHN C. DALTON, JR., M.D., Professor of Physiology and Microscopic Anatomy.

LECTURE XI.

(OCTOBER 8.)

Color of the Blood—Difference between Arterial and Venous—Distribution of these two kinds—Arterialization of Blood in the Adult—In the Fœtus—Difference in Color of Blood in the Fœtus—Change of Color of Blood by Oxygen—Experiment—Conditions of this Change in the Lungs—Experiment—Changes of Color in Blood in Capillaries—Red Color of Venous Blood—In Renal Veins—In Submaxillary Veins—Variation in regard to Functional Activity of Organ—Influence of Nervous System on Color of the Blood—Chorda Tympani—Great Sympathetic—Reason of this Variation in Glandular Organs—In Muscles—Color of Blood in Uterine Veins—In Pregnancy—Explanation.

I have already spoken, gentlemen, in a previous lecture, of some of the variations in constitution which the blood undergoes in different parts of the circulation. We have seen that its different ingredients are in this way constantly becoming altered, increased or diminished in quantity, or altogether replaced by new substances, as the circulating fluid passes through the various glandular and excretory organs. These changes constitute, together, the great double phenomenon of nutrition; the nutrition of the blood on the one hand, and the nutrition of the tissues on the other.

But there is one particular in which this variation of the blood in different parts is more marked and palpable than in any other. I mean, in regard to its *color*. The most cursory examination shows

that there exist in the living body two very distinct and dissimilar kinds of blood, easily distinguished by their physical appearance, viz., venous and arterial; the venous blood, dark and purplish in hue, the arterial of a bright scarlet color. These two kinds of blood are contained, as we know, in two different sets of vessels, the veins and the arteries; and the difference between them is so striking and so constant that the ancients regarded them as entirely distinct, in their nature, their course, and their destination.

But we now know that these two kinds of blood, notwithstanding their peculiarities of hue, are in reality one and the same. It is the same blood, which in one part of the circulatory system is red, and in another part blue. And we shall find that its alteration, from blue to red in the lungs, and from red to blue in the general capillaries, is of a similar nature with the other changes of constitution which we have studied already.

We have, then, blue or venous blood in the veins, and red or arterial blood in the arteries; and the point in the circulatory system, at which the blood is changed from blue to red, is the lung. As the blood loses its fibrin and is drained of urea in the kidneys, so in the lungs, as we know, it absorbs oxygen and exhales carbonic acid. But in the kidneys, the *chemical* change in the constitution of the circulating fluid is the only one observable; while in the lungs, a remarkable *physical* alteration is superadded to the chemical one, and the blood which entered the pulmonary capillaries blue, leaves them of a brilliant red.

So far, these facts regarding the circulation of the venous and arterial blood are perfectly well known. It has long been a well-established fact, that in the living body the lungs stand as a barrier between the two different kinds of the circulating fluid; so that on one side of them the blood in the vessels should be blue, and on the other, red; an entire conversion or transformation of the circulating fluid taking place in the pulmonary capillaries.

But it has been sometimes stated, and by observers of considerable eminence, that this condition does not exist before birth. It has been thought that the arterialization of the blood, which is so palpable a fact in all the warm-blooded animals, in adult life, is not necessary during the fœtal condition, but that then, before respiration has commenced, there can be no alterialization of the blood, and that the circulating fluid is then of the same color in all parts of the body.

Now, this opinion is an erroneous one. It is true, that before birth, there is no respiration by the lungs, and no arterialization of the blood in

those organs. But, at this time, while the lungs are inactive, the fœtus has another organ which, to a certain extent, replaces them, and performs their function, viz., the placenta. For, as in the adult, the blood is sent to the lungs for renovation and purification, so in the fœtus, it is sent to the placenta. Therefore, if any true arterialization of the blood take place in the fœtus, it must be accomplished, not in pulmonary, but in the placental vessels; and as, in the adult, we find blood of two different colors in the pulmonary artery and the pulmonary veins, so in the fœtus we must look for this difference in color, if any exist, in the blood of the umbilical arteries and the umbilical veins.

I have had several opportunities of verifying this point in the fœtuses of carnivorous animals. The mode adopted was, to take an animal (dog or cat) well advanced in pregnancy, produce insensibility by the administration of ether, and open the abdomen. In these animals, the placenta is in the form of a broad belt, which runs round the middle portion of the membranes like a zone, and at this part the chorion is closely united to the mucous membrane of the uterus. But at the extremities of the ovum, the membranes are quite loose and detached, and but slightly vascular, so that they can be cut open without producing any perceptible hæmorrhage. After the animal is prepared, therefore, as I have just said, the walls of the uterus may be divided so as not to wound the placenta, but only to expose the thin and detached portion of the membranes. These membranes are then divided, and the fœtus exposed to view, with the umbilical cord and its vessels still attached to the placenta and the inner surface of the uterus.

Of course, as the animal is only etherized, the circulation, all this time, continues to go on, both in the vessels of the uterus and in those of the embryo.

Now, in these cases I have found that there is a difference in color between the blood going to the placenta through the umbilical arteries and that returning from it by the umbilical veins.

The following experiment will show the nature and extent of this difference:

Experiment, April 19th, 1859.—The uterus of a cat, nearly arrived at the term of pregnancy, was opened while the animal was in a state of etherization. The decidua reflexa and allantois of one of the ova were also opened, allowing the fœtus, perfectly alive, to slip out, still covered by the transparent amnion—the attachments of the cord and placenta still remaining entire. The difference in color between the umbilical arteries and veins was very distinct. They were both dark, but

the color of the veins was very decidedly more ruddy than that of the arteries; *i. e.*, the blood in the umbilical arteries was of the color of the ordinary venous blood, while that of the umbilical veins had a color midway between the ordinary venous and arterial hues. All the fœtuses were healthy, and moved briskly after being taken out of the uterus.

It thus appears that the arterialization of the blood takes place in the fœtus as well as in the adult, but that in these two cases the function is accomplished by two different organs: in the adult by the lungs, and in the fœtus by the placenta. Furthermore, in the fœtus this function is much less active than in the adult; for while in the adult the difference in color between the venous and arterial blood is complete, in the fœtus it is only partial.

Undoubtedly, also, the arterialization of the blood is much less active at an early period of embryonic life than at a later one; and if we were to examine the two kinds of blood in a very young fœtus, we should hardly be able to perceive any difference between them.

But in the adult condition the change of color in the blood, while passing through the lungs, is its most marked and striking alteration. Now we know that this change in color takes place at the same time that the blood absorbs oxygen from the atmospheric air. The absorption of oxygen in an artificial way may also be shown to have the same effect on the color of the blood. Here is some venous blood of the ox, which has been defibrinated for the purpose of keeping it in a fluid condition. It is, as you see, of the ordinary dark purplish color of venous blood. If I pour some of it, however, into this bottle of oxygen, and shake up the two together, the color changes in a few seconds, and becomes a bright scarlet hue, like that of arterial blood.

But in the lungs the change of color is produced, as you know, not by contact of the blood with pure oxygen, but with the atmospheric air contained in the pulmonary vesicles and ultimate bronchial tubes. This atmospheric air, even, is already somewhat impure when it arrives in the deeper parts of the lung; since it has already lost some of its oxygen, and absorbed some carbonic acid, by contact with the mucous membrane of the trachea and bronchial tubes. We might suppose, therefore, that the change in color of the blood would be less prompt and complete in the lungs than when the blood is mixed artificially with pure oxygen.

But on the contrary, the blood is affected, if anything, more quickly in its passage through the lungs than in an artificial mixture with oxygen. This is owing to two facts: First, the structure of the lungs is

such, and the subdivision of the bronchial tubes and the air-vesicles so minute, that the blood is disseminated over a very large vascular surface, and is more intimately mingled, therefore, with the air in the lungs, than we can possibly mix it by agitating with oxygen gas in a bottle. In the second place, we must remember that, after all, the blood in the lungs does not absorb its oxygen directly from the air in pulmonary passages, but from the lining membrane of these passages itself. Here, then, we have a phenomènon of endosmosis; and we have already seen how promptly and instantaneously this process is accomplished, when the absorbing surface is as extensive as that of the lungs.

We can see, therefore, that with atmospheric air in the lungs the blood will be affected as rapidly as with pure oxygen in a bottle.

Here, for example, is a pair of lungs which have been recently removed from the dog, with the pulmonary vessels still attached. The nozzle of a syringe has been fastened into the commencement of the pulmonary artery, through which to inject blood into the vessels of the lungs; and a glass tube is attached to the termination of the pulmonary veins, through which the blood is conducted away, after its passage. I now take some of this venous blood and inject it into the pulmonary artery; the lungs being, at the same time, inflated through the trachea. The change in color, you observe, is instantaneous; and the blood which passes into the lungs blue, comes out red.

Now this change of color in the lungs, from venous to arterial, is usually regarded as the most important alteration which it undergoes in the whole body. For if the arterialization of the blood be arrested, as we all know, life very soon comes to an end. But in reality, as Bernard has very justly remarked, the converse of this change is equally important. The blood must become altered from arterial to venous in the general capillaries, no less constantly than it is changed from venous to arterial in the vessels of the lungs. In fact, of the two changes, if there be any difference between them, that in the general capillaries is the most directly important and indispensable. For the processes of nutrition, which take place in the tissues, and in which the blood itself is changed from red to blue, are those by which life is immediately sustained; while the arterialization of the blood in the lungs is only a secondary one, by which the blood is renovated, and refitted with a supply of the necessary materials.

However, in the natural and healthy condition these two changes are complementary to each other, and go on simultaneously in the different parts of the circulation.

It has been found, however, of late years, that while all the blood

changes from blue to red in the lungs, it is by no means true that the whole of it is altered from red to blue in the general circulation. On the contrary, there are certain organs in which the blood does not assume the venous tinge, but *passes out of them with nearly the same color as before it entered their vessels.* This was first noticed to be the case with the *kidneys.* If the abdomen be opened, in the living animal, without disturbing the circulation, and the renal vessels exposed, it will be seen that the blood in the renal veins is very different in color from ordinary venous blood, and is much brighter and more ruddy in hue. Sometimes it is hardly to be distinguished in color from the blood in the renal arteries. Some care is necessary in doing this experiment, since if the movement of blood in the vena cava, or the renal veins, be in any way obstructed, a backward congestion of the kidney takes place, and its venous blood then becomes blue. But as soon as the regular course of the blood is re-established, it becomes red again in the renal capillaries and veins.

I have here, as you observe, a full-grown cat, which I will etherize and then proceed to open the abdomen. On turning back the abdominal parietes, and laying aside the small intestines, we readily expose the left kidney and its corresponding vessels. The left kidney is the better one for this purpose, since it lies lower in the abdomen, and can be more completely brought into view than the right. There is a curious difference, in this respect, between man and some of the lower animals. For while, in man, the right kidney is placed lower than the left, in these animals the left is placed lower than the right.

After stripping off the fat and areolar tissue which surround the renal vessels, they are seen here crossing the posterior wall of the abdomen, in a horizontal direction. The color of the veins, you observe, is very similar to that of the arteries; and this peculiarity becomes very striking when you compare the appearance of the renal vein with that of the vena cava just below it, or any of the lumbar veins in its neighborhood.

It has been noticed, however, that the red color of the blood in the renal veins is much more marked when the organ is in a state of activity, and while the urine is being freely excreted. Bernard has shown this by exposing the vessels of the kidney, and at the same time placing a small silver tube in the corresponding ureter. He found that while the urine dripped rapidly from the end of the tube, the color of the blood in the renal vein was red. But as soon as anything happened to check the functional activity of the organ, and the flow of urine was

arrested, the circulation in the renal vessels was at the same time changed, and the blood in the veins became blue.

Stripping off the capsule of the kidney is found to cause the same obstruction, and Bernard says that even opening the abdomen by a wide incision, and freely exposing the surface of the abdominal organs, is apt to produce a similar effect. He recommends, therefore, that, in order to get at the renal vessels, an incision should be made in the posterior part of the lumbar region, so that the vessels may be exposed from behind, without opening the general cavity of the abdomen.

Opening the peritoneum in front, however, does not always cause a suppression of the urine, nor produce a serious disturbance in the renal circulation; for I have often been able in this way to observe a very distinct arterial hue in the blood of the renal veins, and in this instance, also, you see it is quite perceptible.

We find, then, that the change in the color of the blood, from red to blue, is not a general, but a local phenomenon. It is caused by the particular action of the blood on the tissues of the individual organ, and by that of the tissues again upon the blood. Therefore, as the processes which go on in different organs are various in their character, we need not be surprised that their effect on the color of the blood which passes through them should be different. We already, then, have three distinct results effected, in regard to the color of the blood, in different parts of the body. In passing through the lungs, the color of the blood is converted into a bright red; in the muscular tissues, it is changed to blue; while in the kidneys it undergoes hardly any alteration at all. No doubt, the changes of composition, which the blood suffers in the kidneys, are of equal importance with those which it undergoes elsewhere; only these changes are not accompanied with any absolute alteration of color, and in these organs, therefore, the blood has nearly the same hue in the veins as in the arteries.

The truth is, that the color of the blood is different in many parts of the circulatory system. Though the venous blood, as a general rule, is everywhere dark, yet it is considerably darker in some organs than in others. The venous blood, for example, coming from the intestines by the portal vein, is darker than that coming from the kidney by the renal vein; and the blood of the hepatic vein, after circulating through the liver, is darker than that of the venous system generally.

Here you have, in these test-tubes, various specimens of blood, which were collected this morning from various parts of the circulatory system. The different colors which they present will illustrate what I

have just said. In one of the tubes there is arterial blood from the carotid artery; in another, ordinary venous blood, from the jugular vein; in a third, venous blood from the vessels of the kidney, which, though somewhat darker than the arterial blood, is very much brighter than that from the jugular; and in a fourth and fifth, you have specimens of portal and hepatic blood, which are darker in hue than any other.

There are also certain varieties of consistency in these different specimens, which are, no doubt, of importance, in regard to their ultimate constitution.

But there is also another fact in this connection, which was first discovered by Bernard, and which is more remarkable than any which I have yet mentioned, viz.: that *the venous blood coming from the same organ has a different color at different times.*

Something of this kind, you will recollect, was noticed in regard to the kidney; but it was first observed in a positive manner in the case of the submaxillary gland. By exposing this organ, and placing a silver canula in the submaxillary (Wharton's) duct, the secretion of the gland could be watched, and the color of the blood in its veins be observed at the same time. Now the secretory action of the submaxillary gland may be excited, at any time, in the living animal, by introducing a little vinegar into the mouth, and thus stimulating the organs of taste. Bernard found, accordingly, that if the submaxillary veins were examined while the organ was in a state of rest, the blood which they contained was of a dark purplish hue, hardly distinguishable from that of any other venous blood. But if a little vinegar were introduced into the mouth, so as to excite the organ by a reflex action, the saliva in a few seconds began to be discharged in abundance from the end of the canula, and immediately the blood in the submaxillary veins became red.

The same experiments were tried upon the parotid gland, and gave a similar result.

But Bernard also made some further investigations, of a very interesting nature, in regard to the influence of the *nerves* in modifying these conditions of the circulation. I have already spoken of the action of vinegar introduced into the mouth, in exciting the submaxillary secretion, as a *reflex action.* The proof of this is the following: The submaxillary gland, as we know, receives nervous filaments, through the submaxillary ganglion, from two different sources: first, filaments derived from the carotid plexus of the great sympathetic; and second, filaments from the Lingual branch of the Fifth pair. We know, also,

that those coming from the Lingual branch of the Fifth pair are, in great part, a continuation of the *chorda tympani*, which is derived originally from the facial nerve, and joins the Lingual behind the ascending ramus of the lower jaw.

It has also been found that the chorda tympani is essential to the action of vinegar in exciting the secretion of saliva by the submaxillary gland. For if the vinegar be introduced into the mouth of the animal after the chorda tympani has been divided, no excitement of the glandular action is produced, while, before the section of the nerve, the saliva will be discharged in abundance whenever the sense of taste is stimulated by the vinegar. Furthermore, if the chorda tympani be divided in the middle of its course and its central extremity irritated by galvanism, no effect is produced; but if the galvanism be applied to the detached portion of the nerve, which is still in connection with the submaxillary gland, an increased secretion of salivia is immediately produced.

The chorda tympani, therefore, has a directly stimulating action on the submaxillary gland, and, when irritated, excites an unusual flow of submaxillary saliva.

Now, Bernard endeavored to ascertain whether the nervous filaments distributed to the submaxillary gland exert a similar influence upon the color of its venous blood. For this purpose he exposed the gland as before, and inserted a canula into its excretory duct. But instead of exciting the gland by the introduction of vinegar into the mouth, he exposed the nervous filament which is supplied to the gland by the Lingual branch of the Fifth pair. On galvanizing this nerve, he found that the discharge of saliva very soon became abundant, and the blood in the submaxillary veins, at the same time, assumed a red color. On stopping the galvanization, the saliva again became scanty or ceased running altogether, and the blood in the veins of the gland resumed its dark color.

It was noticed, however, that both these effects required a little time for their production. Thus, it was only a few seconds after the commencement of the galvanization that the saliva began to be discharged actively, and the venous blood became red; while both the discharge of saliva, and the ruddy color of the veins, continued for a short time after the galvanization had ceased.

Galvanization of the chorda tympani had the same effect; stimulating the discharge of saliva, and causing the blood in the veins to become red. But there were also other effects observed at the same time. For the blood not only assumed a red color when the nerve

was galvanized, but also became unusually abundant, and passed from the capillaries of the gland into the veins in larger quantity in a given time, while its pressure was also evidently increased. Thus we have, in consequence of galvanization of the chorda tympani, four different effects simultaneously produced:

1st. Increased discharge of saliva.

2d. Increased rapidity of the circulation through the gland.

3d. Increased pressure of the blood in the vessels of the part; and

4th. A red color of the blood in the submaxillary veins.

But if the chorda tympani were simply divided or tied, instead of being galvanized, then the saliva flowed less abundantly, and the blood in the veins became darker.

On the contrary, if the same experiments were tried with the carotid filament of the great sympathetic, the effects upon the submaxillary gland and its circulation were directly the reverse. When this filament was irritated by a galvanic current, the secretion of saliva was at once diminished in quantity, and the blood became darker in color, and flowed less rapidly through the vessels of the organ. It seems, therefore, that there are two nerves, exerting opposite influences upon the submaxillary gland: viz., the chorda tympani, which stimulates its secretion and causes its venous blood to become red; and the carotid filament of the great sympathetic, which diminishes its secretion and causes its venous blood to assume a dark color.

But the most marked effect was produced, in Bernard's experiments, when one of these nerves was divided or tied, and the other galvanized at the same time. Thus, if the chorda tympani were tied, and galvanism then applied to the submaxillary filament of the sympathetic, the discharge of saliva stopped altogether, the blood passed very slowly through the vessels of the gland, and became of an excessively dark color; but if the filament of the sympathetic were then divided, and the galvanic current passed through the chorda tympani, in a few seconds the saliva was poured out in great abundance, and the blood in the submaxillary veins became of a brilliant red, and was poured into them from the vessels of the gland in large quantity, and with a "pulsating movement similar to that of an artery."

Here, then, we have two glandular organs, the submaxillary and the parotid, in which the color of the blood varies in a most remarkable degree; and, what is very curious in this respect, while the organ is at rest, the arterial blood is transformed, in passing through its vessels, and assumes a blue color; but when it is in a state of ac-

tivity, the blood seems to suffer no alteration, and passes out, by the veins, with its ordinary arterial hue.

There seems to be a strange anomaly about this fact, which it is, at first, difficult to understand.

I have no doubt, however, that the explanation which Bernard first gave of this matter is, for the most part, the true one. In all the bodily organs there are two different conditions, which alternate with each other more or less completely. These are, first, a condition of external activity, or *function;* and secondly, a state of internal activity, or *nutrition.* We may compare these two conditions, in the separate organs, with the waking and sleeping states of the whole body. In the waking state, the functional activity predominates, and all the organs are at work, and consequently become more or less exhausted. During sleep, the senses and the active powers generally are suspended, while the processes of nutrition and reparation go on, and the vigor of the body is restored.

Now, as we have already seen in a previous lecture, the fluids secreted by the glandular organs are always composed of two different kinds of ingredients: First, a peculiar and characteristic animal matter, such as the *ptyaline,* or viscid substance of the saliva, which is produced and manufactured in the substance of the glandular organ itself; and secondly, the accessory ingredients, such as water, saline matters, &c., which are derived directly from the blood, and merely exude from the vessels by exosmosis.

During the interval of rest, therefore, while there is no external discharge of a glandular secretion, the peculiar animal substance which is characteristic of it is being produced by the processes of nutrition, and stored up in the tissue of the gland. It is during this period that the blood circulates slowly through the vessels of the organ, and becomes changed, during its passage, from arterial to venous. For a great deal of oxygen is used up in this process, and a great deal of carbonic acid evolved. Consequently, the color of the blood suffers a complete alteration. But when the stimulus comes which excites the external functional activity of the gland, then the circulation of the blood in its vessels is hastened, its pressure increased, and an abundant exudation of watery and saline matters takes place, which carry away with them the animal matter already accumulated in the glands, and so supply a large quantity of the secretion by mere exosmosis from the blood.

We can easily convince ourselves that this is true, by noticing the change in composition of a secretion, during its continued discharge.

When the secretion is excited, after a long interval of rest, the portions first discharged are very rich in the peculiar animal matters supplied by the gland. But as it continues to flow, it becomes less and less concentrated, and the longer it continues to be discharged, grows constantly more and more watery in its composition.

This is because its animal constituents are supplied by the nutrition of the gland, which takes place slowly, and only during the interval of rest; while its watery and saline ingredients are derived from the blood, and will continue to be supplied in abundance, until the whole blood is itself impoverished.

So, while the secretion is being actually discharged, there is comparatively little consumption of oxygen by the gland; and the carbonic acid which is evolved, instead of being carried away by the blood alone, is in great part discharged by the secretion itself. The blood, accordingly, does not at this time become blue, but retains, more or less perfectly, its arterial color.

But this is very different from what takes place in a muscle. For in the same series of experiments which I have just mentioned, Bernard found that when a muscle is relaxed its venous blood is comparatively red in color, while as soon as the muscular fibres are thrown into a state of contraction, the blood becomes dark-blue. To understand this, we must remember that the muscle is not only nourished, like other organs, while in a state of repose, but that during its contraction its animal ingredients undergo a rapid decomposition, with an abundant evolution of carbonic acid; and this carbonic acid is not discharged, as in the case of the glandular organs, by a secreted fluid, but is absorbed and carried away altogether by the venous blood; the blood, therefore, in this instance, necessarily acquires a strong venous tinge.

In a state of functional activity, therefore, the venous blood coming from the muscles is blue, while that coming from the kidneys and the salivary glands is red.

Are there any other organs in which the venous blood retains its arterial color?

I have found this to be the case with the internal organs of generation, in a number of experiments which I have performed for this purpose. I will relate some of these experiments, with the results which were derived from them.

Experiment, Sept. 5th.—A young tom-cat was etherized and opened twenty-four hours after feeding. The spermatic veins contained *perfectly* red blood, not different in color from arterial. The blood of the renal veins was purplish red.

Experiment, Sept. 12*th.*—A tom-cat was etherized and opened four hours after feeding. The spermatic veins, which were at first dark, became ruddy after a few minutes. (The dark color at first was possibly owing to some obstruction to the venous circulation.)

Experiment, Sept. 5*th.*—An adult female cat was etherized, twenty-four hours after feeding, and the abdominal cavity opened. The uterus was empty. The uterine veins contained *perfectly* red blood, not distinguishable in color from that of the uterine arteries, and contrasting strongly with the dark blood of the vena cava. The blood of the renal veins was quite ruddy, though not so red as that of the arteries, or of the uterine veins.

Experiment, Sept. 9*th.*—A female cat, not pregnant, was etherized and opened one hour after feeding. The blood in the uterine veins was of a brilliant red, similar to that of the arteries. The blood in the renal veins was of a reddish purple, less bright than arterial blood.

Experiment, Sept. 15*th.*—A female cat, not pregnant, was etherized and opened, seven hours after feeding. The renal and uterine veins were both at first of a dark color, but both after a few moments became very ruddy, the uterine veins remarkably so.

While the uterus is in an inactive condition, therefore, the blood returns from it to the veins, with its color unchanged. But this is not the case in the condition of pregnancy, as was seen in the following experiment:

Experiment, April 19*th.*—A female cat, nearly arrived at the termination of pregnancy, was etherized and the abdomen opened. The uterine veins, which were very large, were full of perfectly dark blood, though the renal veins, at the same time, showed a distinct ruddy color. The fœtuses were all alive and healthy.

This venous condition of the blood in the uterine veins does not depend altogether upon the growth and development of the fœtuses, but partly, at least, on that of the uterus itself. I have met with one instance in which this was proved very distinctly.

Experiment, Sept. 12*th.*—A female cat, pregnant for about four weeks, was etherized and opened. On examination, all the fœtuses were found to have been withered some time previously, though the uterus and placentas had continued to enlarge. The blood in the uterine veins was very dark.

The same condition also continues after delivery, probably so long as the uterus remains enlarged, and while it is undergoing its retrograde evolution.

Experiment, Sept. 12*th.*—A female cat, that had been delivered a

short time previously, and was still in lactation, was etherized and opened. The blood in the uterine veins was dark, though not quite so deep colored as that of the vena cava.

Here, then, we have two differing conditions of the uterus—an inactive or quiescent condition, in which the blood passes through the organ unchanged in color; and a condition of active development, in which the blood in its veins becomes blue. How are we to understand this difference? I presume its cause is to be found in the peculiarly intermittent nature of the uterine functions. In the non-pregnant condition, the uterus is probably the most inactive organ in the whole body. It has literally no function whatever. The nutritive changes which are required to maintain it in a state of integrity are therefore very slight, and yet it must be tolerably well supplied with blood, since it may at any time be called into action. Its tissues consequently suffer but little alteration, and there is but little change of the color of the blood in its vessels.

As soon as pregnancy is established, on the other hand, the substance of the uterus begins to enlarge, and continues to be developed in a very remarkable manner. It is to be noticed, also, that the function of the uterus, during pregnancy, is altogether a *nutritive* one. A very large quantity of its own tissues are newly developed, and it has also to supply material for the growth and support of the young embryo. It is precisely in performing such functions as these that we have seen the blood in other organs become changed in color from arterial to venous, and there is even more reason for this to occur in the pregnant uterus than elsewhere. Beside, I have already mentioned that the blood of the fœtus, in passing through the placenta, becomes changed in color, partially at least, from blue to red; and as this change is effected altogether by the influence of the circulating fluid in the maternal part of the organ, it is easy to understand why it should be accompanied by a corresponding alteration in the maternal blood, and that this should be changed, at the same time, from red to blue.

But we must recollect, gentlemen, that after all, these are only explanations. The facts which we have learned, however they may be accounted for, are important ones, since they show that the alterations, which the blood undergoes in the tissues, are not only different in different organs, but in the same organ at different times. While the constitution of the arterial blood is everywhere the same, that of the venous blood is everywhere different. The circulating fluid, therefore, which distributes the same materials to every part of the body, brings back to the venous system a multitude of different ingredients.

Ligatures and Sutures. By Robert Nelson, M.D., New York. (Read before the Medico-Chirurgical College, June 28, 1860.)

Before entering upon an examination of the operation and effects of a ligature upon a living structure, it will be proper to make a short exposure of that action which is called ulceration; since every ligature is sure to cause ulceration, that being the process by which they free themselves, or "cut their way out," as it is commonly termed.

An ulcer is an excavation or destruction and removal of a portion of a free surface, while the neighboring parts retain their integrity. It continually oozes forth a watery or a purulent fluid, or both of these more or less mixed. The first step that leads to ulceration is *liquefaction* of the atoms composing the part; the absorption of this liquefied matter as fast as it is formed, and as long as the surface where it takes place is sealed up by an impermeable covering, as the epidermis. When this barrier is destroyed, no longer compelling absorption, the liquefied atoms escape by exudation. An ulcer may happen in any free surface—as the exterior of the body—the surface of mucous canals—rarely, if ever, on true serous surfaces—the free surface of veins or arteries, possibly—the interior surface of artificial cavities when they communicate exteriorly, as in open abscesses and sinuses.

Ulceration is of two kinds: 1st. That which is due to a morbid state of the whole system—as in scurvy, or syphilis; or from a morbid state of only a part of the body—as in varicose ulceration of the legs. 2d. That which has a local origin—follows the direct loss or division of substance by mechanical causes, as wounds, or pressure that arrests the arrival of nutriment destined to replace the natural decay and liquefaction of atoms which have served their time—or chemical destructions, such as poisons, burns, frost, &c.

It is unnecessary on the present occasion to follow out all the foregoing causes and forms of ulceration, since only one of these—pressure—is concerned in the ulceration due to ligatures and sutures, and I now proceed to endeavor to explain how this takes place. The alphabet of ulceration is best learned by studying what takes place in bed-sores; for these are ulcers of the simplest kind, and are precisely similar to the ulceration produced by ligatures in their track surrounding the included substance. The bed-sore is not preceded nor accompanied by inflammation, at least until it has existed some time, and then only at its limits. It is produced by the pressure a part suffers, during long confinement of debilitated persons to one position—as is seen

in cases of phthisis, or prolonged fevers; but does not happen to patients otherwise healthy, and in whom nutrition is active—as in cases of fractured femur, where confinement to one position is equally prolonged.

The first letter of this alphabet is:

1st. *Liquefaction*, or natural decay and waste of atoms that have served their period.

2d. *Absorption*, or discharge of this liquefied and effete matter.

3d. *Suppressed Nutrition*, due either to an arrest of supply of nutriment, or arrest from any other cause.

4th. *Exudation of the liquefied matter;* and more or less secretion of pus, which is a reparative process, or an attempt to create a covering to the naked and open surface.

Liquefaction.—The atoms composing the body live only a limited time; after which they liquefy into effete matter, their place to be restored by new atoms derived from the daily nutrition carried to all parts mixed with the blood.

Absorption.—The liquefied effete matter is absorbed with the regularity of its production, is taken into the torrent of the circulation, and is eliminated from the economy by sundry special structures—as the lungs, kidneys, &c., and discharged as so much excrement.

Suppressed or arrested nutrition.—Should the natural supply of pabulum furnished by digestion (which is poured into the torrent of the circulation and mixed with the blood) be arrested in its destiny, by any means, atrophy must ensue; for in that case nothing reaches the part to be there assimilated into the place of the decayed atoms which are ceaselessly being removed, and in a healthy state of the part as ceaselessly restored by new creation. Long before the formation of a *bed-sore*, the whole body has become debilitated, atrophied. The nutritive function is weakened, leanness becomes universal, and as a consequence, the projecting portions of the skeleton are no longer adequately cushioned. These projections—say the sacrum, ilii, elbows, &c.—compress the intervening soft tissues against the resisting bed. This pressure squeezes out of the intervening substance, not only the juices usually there, but also compresses into complete emptiness the blood-vessels now attenuated with the rest of the body, arresting through their course both the blood and the accompanying pabulum furnished by digestion for the supply and support of tissues, maintaining a state of total inanition, and that, while waste is steadily and naturally going on. This empty state of the vessels is produced by pressure, in the case of the bed-sore, and is easily seen and proved in this way: let a plate of

glass be substituted for that part of the bed on which the projecting bone presses, and a corresponding piece of the bed removed so as to enable the observer to see through the glass; the part will be seen to be quite *white*—bloodless, absolutely bloodless. A simpler and readier mode to make manifest the bloodless and nutritionlessness state of the part is to roll the patient on to his other side, expose the bedridden part, which, now that the previous pressure is removed, will have become deeply red, being pervaded by a flux of blood into the attenuated vessels. Press on to this red surface a piece of glass, and instantly the newly arrived blood, (and its accompanying pabulum) the red blush, wrongly called inflammation, is expelled—squeezed away, and the part is seen white and bloodless. It is now evident that the constant pressure produced by lying long on the same part must exclude nutrition, while liquefaction, and absorption of the liquefied effete matter, is steadily progressing; until, at last, all the soft parts intervening are removed, leaving an open raw surface—an ulcer. The deep red and an ensanguined appearance of a bedridden part seen when pressure is removed is called inflammation by the nurse and superficial observers; but wrongfully so, for in every case of inflammation a fibro-serous substance is effused into the interstices of the part affected, or on the surface, but in the preparatory steps of the bed-sore nothing of the kind does or can happen. The great redness seen when the pressure is removed is due not to inflammatory enlargement and distention of vessels, but to the sudden influx of blood into vessels attenuated by long pressure; and the accompanying heat is due to the same cause—an increased volume of blood. The real state of the part is simply a congestion.

Exudation of the liquefied matter, and the discharge of pus. The first three letters of this alphabet, or conditions, of ulceration having reached their completion, the epidermis gives way—a solution of continuity—an open ulcer exists. The epidermis was a restraining barrier that prevented the liquefied effete matter from escaping, and forced it into absorption; but when destroyed, or detached from its intimate adhesion, the fluid finds a more ready escape by transudation at the surface than by integral absorption.

Generation of pus and of granulations.—There are ulcers that do not generate pus continually, and the same may be remarked of granulations. This defect is often apparent in the common varicose ulcer, which always transudes a fluid only, but which has more often pus added to it. When the dyscrasia, or other cause, productive of an ulcer is weak, a tendency to repair is seen in the attempt set up by a

generation of pus, and granulation—new products hitherto unknown to the economy, destined to serve in the place of the lost covering, ultimately drying into an epidermis—the first stage of a cicatrix.

It is unnecessary on the present occasion to discuss the part taken by the nervous matter that enters into the composition of the tissue in which ulceration takes place. Enough has now been said to explain the principle upon which ligatures and sutures sever the structures they include—a severance that has nothing in common with a cut—"cutting their way out," as it is sometimes called.

How Ligatures and Sutures act.—Ligatures are placed around vessels, and are necessarily drawn tight, that they may occlude the cavity. Sutures are passed through the soft parts in cases of wounds to draw the sides together, but are drawn no tighter than is sufficient to hold the parts in approximation. Both exert a compressing force on the substance included in their grasp, and in proportion to this pressure do they atrophy the intervening substance, precisely as is seen, but on a larger scale, in the case of a bed-sore. But, before describing their physiological operation, let us examine what takes place in the case of a seton, which is an example of the simplest action of a ligature, or rather a suture, although it properly belongs to the *fourth* condition of an ulcer—generation of pus and granulation.

The wound that is made to receive the seton converts the structures through which it passes, heretofore closed, into an open surface unprotected by epidermis, scab or crust, that could seal the surface, and by such covering arrest the escape of the ambient interstitial fluids. As the track is not in a morbific state, a reparative process is soon set up—first by the effusion of lymph, next by secretion of pus, and lastly organization of granulations; but no complete reparation can happen because of the presence of a dead body—the seton. So long as the seton simply lies in the wound without compressing any part of it, the effort at normal reparation goes no farther than a generation of pus and granulation. In this way a seton may remain in the parts for many months without "cutting its way out." But should the tails of the seton be drawn taught and so tied, it will press on the inner edges of the bridge at each orifice of the track, and in proportion to the pressure so exerted, will squeeze away the interstitial juices nearest by, and at the same time proportionally arrest the arrival of nutriment to restore normal waste—liquefaction—of atoms that have served their period of existence. Let the tails of the seton be tightened daily as fast as they relax from the shortening of the bridge wasted away by the pressure, until at last the seton will have

worked—ulcerated—its way out. While this destructive process is going on through the bridge by reason of the seton-pressure at its ends, the distal edges of the orifices of the track, suffering no pressure, no arrest of nutrition, are actively engaged in reparation—pus is formed and granulations organized, epidermis dries over them and seals their surface against exudation—a cicatrix is formed, following in equal paces the destruction of the bridge. In all this the seton has exerted no "cutting power;" it has simply arrested the nutrition of the portion compressed, while liquefaction naturally progressed. A similar operation is performed in those cases of fistula in ano which are treated by a leaden ligature, the weight of which is constantly pressing on the upper orifice of the fistula, atrophying it there; and in a few cases permitting of the generation of granulations and the filling up of the track outside of the grasp of the lead. A simple thread tightened daily would have answered the same purpose. It is a filthy and a most unphysiological procedure. Another example is often met with—that of ear-rings. When the lobe is pierced and a *light* ring inserted, the track soon heals, and is protected by an epidermis. Should a heavy ring be subsequently substituted for the light one, its constant pressure arrests the arrival of nutriment where it bears, while liquefaction and absorption of disintegrated substance as steadily goes on, without any oozing out because of the retaining epidermis. The process is a slow one; but at last the weight of the ring has gradually atrophied itself through, leaving the lobe divided into two portions.

Ligatures.—When a ligature constringes any living part, a vessel, base of a tumor, or other structure, its first effect, like in the bed-sore, is to squeeze away the interstitial fluid that is always more or less present in, and fills out, every structure. The second effect is the exclusion of the arrival of any nutriment within the part constringed, to be appropriated to the regeneration of the normal destruction of atoms that ceaselessly goes on. In this way, a ligature works (not cuts) its way through the part it encircles, as the base of a tumor, or the calibre of an artery. In the case of tumor the distal portion of it dies of inanition, mortifies, and sloughs off; while the part constringed goes through the process of ulceration produced by pressure. In the case of an artery, its two inner coats, possessed of very little circular tenacity, are readily divided by a narrow ligature tightly drawn. The cut so produced throws out fibrinous lymph, which soon becomes organized, creating a uniting medium that permanently closes the vessel, while the portion which lies immediately within the grasp of the ligature slowly disintegrates and suppurates until the ligature is detached.

I purposely avoid detailing the various facts that regard the formation and presence of a coagulum destined to fill, or plug up, the calibre of the vessel for some distance beyond the ligature, or as far as to the next nearest branch given off; for this plug does not in the least degree influence the operation of the ligature. The foregoing described process is that which takes place in every case where a narrow ligature, as a thread, is used, and in healthy patients; but when a morbid state of the system, or vessel, exists, the effect of the ligature will still be the same as regards the cutting and ulcerating through the constringed part; but the throwing out of adhesive lymph, and its organization at the cardiac side of the divided inner coats, may not take place, or taking place, be so feebly organized as not to constitute a sufficient barrier; in which case, even before the ligature is wholly detached, the impulse of the blood will rupture such a feeble barrier, and give vent to hæmorrhage—secondary hæmorrhage. The working through of a ligature, while occlusion of the vessel is imperfect, used to be of frequent occurrence in the early employment of ligatures, even in healthy patients, on account of the size of the ligature. The fear that a narrow ligature would cut through the vessel too soon, prompted the employment of a thick cord, even of a flat tape, and in these cases secondary hæmorrhage was a frequent occurrence. Some went so far as to interpose lint or rag between the vessel and ligature; but these precautions nearly always were followed by the accident they were intended to guard against—secondary hæmorrhage. At last the subject was critically inquired into by Jones and Hodgson in a series of experiments on animals, which established the proof that a mere thread was the safest form of ligature, and led to the conclusion that a division of the two inner coats of an artery was essential to secure a permanent closure of the vessel; that this division permitted the coats to retract, come together, and diminish the calibre of the vessel; to come together, and unite by the adhesive lymph that their divided face threw out. To these effects, it was added, that a coagulum formed in the vessel from the site of the ligature onward, and that this coagulum adhering to the coates of the vessel aided in the security. At that early time several other curious theories prevailed; one was, that in cases of aneurisms, it was necessary to apply two ligatures to the vessel, and divide it between them, to permit it to retract and bury itself in the tissues. Another was, in amputations, to apply two ligatures, one tight, the other loose in reserve, to be tied in case the first should cut through too soon, or be driven off by the pulsations. Another precaution at times taken was to transfix the ves-

sel with one end of the ligature, and make a knot on it, in the hope that this would prevent the impulse of the blood from forcing off the ligature. At last experience discarded all these notions, and established the present mode—that of a single narrow thread—which is safe, suitable in all cases, and rarely followed by secondary hæmorrhage when the patient is in tolerable good health. But should the vessel exceed the calibre of the femoral or carotid artery, the best kind of ligature, and best applied, may sometimes fail, even in the hands of the most able surgeons; its failure is certain in a vessel the size of the innominata, pretty certain on the subclavian, and not infrequent on the common iliac. The cause of this failure lies in the size of the vessel and not in the ligature, as any reflecting mind would anticipate, and any person might detect on an examination of these large vessels; but enough has been said, as the subject is limited to the ligature.

Sutures.—An interrupted suture employed to close a wound acts on the part within its grasp precisely as was stated when describing the "cutting out" of a seton. The tails of the cord are drawn tight, and press on the inner edges of the orifices of its entry and exit; this pressure excludes nutrition and repair while liquefaction and destruction go on; the result is ulcerating, not cutting out; it is a physiological, not a mechanical severance of the part. Many persons suppose that a narrow ligature will work through quicker than a broad one; this idea is true only in proportion to the relative force exerted between a narrow and a broad cord; since an equal amount of traction applied to both will be much greater on the narrow than on the broad one. The *twisted* suture acts in the same way that the interrupted one does, only that the pressure is less equally divided, being greatest at the points and less above and in the track of the wire, which is simply an unyielding skewer. In all these cases the process of working or cutting through the part is the same as that which takes place in the bed-sore.

Material of which Ligatures are made.—Animal fibre, such as sinew from fascia, cat-gut, even leather, have been employed, under the idea that they were more congenial to the living tissue than cords made of heterogeneous substances, as silk, flax or hemp. A very little reflection would at once convince any one that animal substances would prove to be the worst kind of material for this purpose: 1st, It would quickly imbibe moisture, become soft, extensile, and lose its grasp. 2d, It would be subject to decomposition, perhaps putrefy, and so add a poison to the wound in which it lay. However, it was soon abandoned. Silk thread, on account of its great tenacity and even size,

got into vogue early, and still maintains its standing, especially in private practice, but it possesses no advantage over vegetable fibre than what is due to its greater strength. Flax or hemp thread, like silk, suffers no alteration in a wound, however long retained; and if there be any difference between it and silk as regards exciting irritation, it probably lies in favor of the vegetable fibre. In hospital and military practice, where economy becomes an item, all other effects being equal, flax or hemp thread, on this account, holds a superiority over silk, and is the material generally used.

Metal.—Lead has been suggested and even used under the dictum that it is innoxious, even friendly to living tissues, seeing with what impunity leaden balls remain for years in the flesh. But its want of tenacity prevents its being drawn into wire sufficiently fine to serve either as a ligature or a suture.

Silver has long been in use, especially in the twisted suture; but it presents many disadvantages. 1st, To insert it in a steel or other hard point is requisite; 2d, Silver tarnishes very soon, (however pure,) being quickly acted on by the fluids, or it acting on them; and it is likely that for this reason, a silver suture suppurates more than silk or flax. 3d, A stock of these pins or wire must be kept on hand, and the pins can be used only once, since the projecting ends ought to be cut off to prevent them interfering with the dressings; and after their insertion they must be bent to suit, and lie easy in their track; even then they do not lie so easily as silk or flax, but still maintain the character of a skewer. To inexperienced persons all this seems to be a trifle; but good surgery never neglects trifles.

Tin, from its want of tenacity, like lead, cannot be drawn sufficiently fine. This objection is easily overcome by tinning brass wire. More than forty years ago, meeting with the vexation of ulceration from silver pins in hare-lip operations, I had recourse to common household pins, and found the result so favorable that I have ever since employed no other kind. The advantage they possess over silver is, that they are readily inserted without the aid of a steel point; that they do not cut the parts, but merely thrust them apart; that they never tarnish or excite any chemical action, as silver does; that they are easily bent to suit the track; that they are cheap and always at hand, and cutting off the projecting ends is no loss. As a contrast between silver and tinned pins, I may mention one case. Seven years since I laid open the abdomen from the pubis to the sternum for ovarian tumor. Not being able to procure long common pins, I was forced to use three or four of silver to effect the principal approximation, and in the

intervals I inserted several ordinary pins. Those of silver suppurated in their whole track and had to be removed on the third and fourth day, while the others were left in six days with complete impunity, leaving no mark after the cure, while the sites of the silver ones all formed cicatrices, that are very apparent yet, now seven years since the operation. These facts have been verified a few days since by several members of this society, who have examined the lady. It may not be out of place to mention one more case in favor of common pins. A fashionable lady, sky-larking, received a slap in the face from her friend, the diamond ring on whose finger cut through the upper and lower eyelids, but strange to say, did not injure the eye. In this case, I inserted at the edges of the tarsus of each lid one of the smallest sized pins, (baby-pins,) bent them to suit the part, and cut off the ends. The rest of the gap was easily held by an adhesive strap and compress. Thirty-six hours after the pins were removed, agglutination was perfect, and a cure without a mark effected. About thirty years back, sewing needles were used by Mr. Lawrence, I believe, at St. Bartholomew's Hospital, in hare-lip; but being steel, could neither be bent nor the ends cut off, which rendered them inconvenient.

Platinum and Gold.—I do not know that platinum has ever been used. In 1829 or '30, I used gold in a case of vesico-vaginal fistula, and since, as a clamp suture, which answered well. One of these I presented to one of the leading surgeons of the New York Hospital; and in 1840 or '41, that gentleman got explanations from me how to use it, he having a case of a lady from Mobile. But he never mentioned to me whether he was successful or not. However, I do not imagine that these costly metals possess any advantage over the equally serviceable iron wire lately introduced into practice. It is very tenacious, small in size, from thirty to forty of the wire guage, quite flexible, does not irritate the parts. It is previously annealed to soften it, and this coats it with a thin layer of protoxide, which is unaffectable by the fluids of the part, and protects the rest from rusting—sesquioxydation. It is cheap, and accessible to every one. It is strange that the justly celebrated surgeon who introduced iron wire into notice as a ligature, should insist on its unoxydizability as one of its great merits, while the fact is, that the brightest wire, as a steel needle, is prone to oxydize in the flesh in a very short time, not many minutes, as is daily witnessed in practice; for when a servant breaks a piece of needle in her hand, or elsewhere, on removal, even half an hour after the accident, it will be found to be black—protoxydized. Needles are often removed from the body, where they have remained several years buried or traveling in the flesh; they are always found blackened, due

to a coating of protoxide, all this time, without irritating, without producing a single atom of pus, or being surrounded with any fluid. This thin coat of protoxide completely protects the metal within from additional oxydation; nor is it susceptible of taking to itself an additional dose of oxygen, to become rust—sesquioxide.

Another falsity has lately been argued in favor of iron wire, (which needed no false recommendation,) that it, unlike fibrous materials, cannot be penetrated by pus, &c., like silk or flax, which imbibe the ambient juices, retain them to become noxious, even poisonous. In support of this view an experiment is adduced: a wound was made in a pig, and a fibrous suture used to close it. A few days after, another wound was made, into which the saturated suture taken from the first wound was deposited, when, behold! the new wound becomes irritated—empoisoned. The conclusion deduced is, that the iron suture is safe, because it cannot imbibe and retain these fluids, while the fibrous one will. A very little *nous* would have suggested to the author of this silly experiment that his first wound received a clean cord, and that he deposited into a fresh wound one that was saturated with morbific matter. He lost sight of the fact, that the ligature did not become morbific until the fresh wound had become a secreting, not an absorbing surface—a surface that was continually *washing away;* while the new wound, into which he put his saturated suture, was a fresh one, had veins, absorbents as well as nervous atoms, raw, and exposed to the deleterious matter of the old suture. Had he remembered what takes place in the track of an old seton, protected by a secreting surface and a coating of congenial pus, he probably would not have fallen into the error he was so ready to publish. It is erroneous conclusions deduced from stupid experiments, flippantly promulgated, like this piggis one, that mislead the judgment of those members of the profession who exercise it as a *business,* not as a science, leaving the labor of histology and physiology to others, accept *printed* dicta as truths without taking the trouble, and sometimes without the capacity to understand them.

Another, and a new substitute for a ligature on vessels, has lately been introduced—*acupressure.* This has been several years in use as a clumsy mode of closing varicose veins. It will often prove useful, no doubt, in the hurry attending upon accidental wounds, to serve as a primitive ligature; and will have its run among enthusiasts and seekers after novelty, where the usual ligature will prove better. But who has forgotten the much boasted Torsion of Amussat? which, like this, was recommended and employed even in amputations of the thigh.

It had its day. As to the remark made by its advocates, "*How little compression of a vessel suffices to arrest the flow of blood through an artery*," was a fact long known to every experienced surgeon, and was insisted upon and published by John and by Charles Bell more than fifty years ago. The rule to draw the ligature on an artery very tight was not made on the idea that such was necessary to arrest the flow of blood through it; but was founded on the experience ascertained of the benefit of dividing the inner coats of the vessel, to arrest the pain that would linger after a lightly tightened ligature, and to secure its early detachment, thereby avoiding what sometimes happened—undue suppuration.

REVIEWS AND BIBLIOGRAPHY.

"*Clinical Lectures on certain Acute Diseases.*" By Robert Bentley Todd, M.D., F.R.S., &c., &c. Philadelphia: Blanchard & Lea. 1860.

The views of an author so distinguished for medical attainment and practical observation are always eagerly sought after. And so great an influence does such a writer attain, that from one-half of his readers he obtains a ready admiration with an undisputed belief. Not only from his credence as an author does this renown establish itself, but to this is added the authority of the high position of "Physician to Kings College Hospital." The very boldness of stepping out from the routine and long-sanctioned views and practice, adds yet more to the trust of the unquestioning half, whilst it gains from the other moiety either a predisposition to receive with favor the doctrines or treatments advanced, or a determination to examine them with scientific fairness and practical comparison.

In the preface, Dr. Todd states fairly certain problems. He justly draws a distinction between mere morbid anatomy and pathology; whilst he is fully aware that the *last* conditions of deviation from the healthy standard are not to be received unquestioned, as they do not serve to illustrate the *progressive* vitiations incident to the disease in its natural course either of retraction, or of destruction. It is an undeniable fact, that the mental eye of most medical men is filled during the progress of a disease and its treatment, more with the exact morbid findings as witnessed after death, than with the progressive pathogenesis.

From this stand-point these "Clinical Lectures on Acute Diseases" are to be viewed, and not from any pre-educated belief in the results attending a practice totally at variance with the pathological interpretations and remedial doctrines therein taught. The writer of these lines well remembers the terse reply of a very distinguished hospital surgeon, when asked by a stranger of high professional standing "How he cured such a disease?" "We do not *cure* it at all," was the reply, "we *prevent* it!" Such seems to be the *animus* pervading this work.

Dissatisfied with the results of his previous views of practice, and unwilling to continue in the old idea of regarding disease as attended by an excess of vitality, and to apply remedies for conditions *after* they were manifested, Dr. Todd has boldly made issue against these doctrines. In many years we have held and practiced under somewhat similar reasonings, inculcated in this volume, but have not allowed those ultra views to influence us in assailing all antiphlogistic treatment in certain cases, in which it has not only been proved to be salutary, years before we were born, but which is in perfect keeping with the doctrines of progressive pathology taught at this very time. There can be no doubt as to the logical inference, that if, for the most part, supportive treatment has been found beneficial, that in others a depletory course may *sometimes* be called for. The balance of the working powers of life is rarely in the ascendant; but as this may ensue sometimes, under certain conditions, surely a farther departure by the administration of stimulant remedies would be unnatural, and therefore unphilosophical.

The influence of any ultra assertions is not permanent; and, though their unchallenged adoption may lead to temporary evil, yet this very fruit of evil produces seed of future good. The crucible of theories is trial; in the end all conflicting doctrines are sifted, their results weighed by unbiased practical men, and just so much accepted as will stand the discrimination of patient clinical comparison. The error of the old school consisted in the persistent study of the organs *after* death, and not of the *progressive* changes of the dying structures. The one issuing therapeutical dicta for the restoration of parts already destroyed; the other advocating treatments against anormal conditions about to ensue, but whose stride had been learned by the patient study of progressive pathology. From these latter views arose the doctrine of the necessity for sustentation of the working powers of the system, by appropriate alimentation and timely stimulation.

But to discover this *timely* administration, is the difficulty; and its solution is never to be made by the ultra of either opposing par-

ties. In some diseases, the working powers of the system are merely *impeded;* whilst in others they are *impaired.* The rheumatism of the ultimate air-vesicles of the lung, happening in a robust, plethoric young man, is certainly not to be treated in the same manner as when it attacks those parts in an exhausted, anæmic individual. In the plethoric patient, the vascular system is surcharged with blood requiring active oxygenation. But this, from pain, from exudation, and the exhaustive "air hunger" of the lung, is impossible. Nerve-force is abundant; but a mechanical impediment interferes with the just performances of the aerating system. Stimulus would only serve to increase the existing difficulties. It might lash up the force of the nervous system, already supplied more than sufficient for the present automatic purposes of life, but, would it obtain a reciprocal response from the tissues affected, and from the still sound adjacent structures already overtaxed? On the contrary, a greater *necessity* for oxygenation would be excited, whilst it would preclude the *possibility.* Thus *the harmony of relation between cell-action and nerve-force* is *broken,* and the progressive changes in the structures ensue, unless death suddenly supervene before the regular succession of morbid phenomena appear.

Then, what is to be done? Only three modes are practical; but they do not stand on the same level. First, the expectant or let-alone system. Second, the equalizing of the quantity of the blood to the capacity of whatever sound aerating surface may exist. Third, to paralyze the organic and cerebro-spinal nervous system sufficient to allay the demand, not only of the lung, *but the necessity of all the structures,* for oxygenation. The first of these therapeutical positions is trusting more to a *hoped*-for strength in the patient, than in one's own knowledge of the danger, and of our power to remedy from imminent peril and suffering. The second has stood the test of experience, and merely requires the discriminative judgment of the practitioner to avoid the "*minium diligentiæ.*" The third, although successful many times, yet has the disadvantage of disturbing the absorptional translation of any specific treatment for the immediate relief of the patient, independently of polypharmacy, the combined actions of which are always more or less doubtful. Bleeding, local or general, has the advantage of expediency. But in the anæmic individual, every position is changed, and life is to be sustained by early and constantly regular stimulation; whilst such special antagonistic conjunctives are to be administered as may be demanded.

Such cautious views are to be taken, before adopting the apparently ultra enunciations of Dr. Todd's able productions in the volume above

cited. His cases are to be rigidly analyzed as regards the constitutional condition natural to each patient, in conjunction with the existing circumstances of labor, habits, exposure, and antecedent disorders. The effects of localized pyæmia, more or less latently marked—(not septicæmia)—are to be studied, and to be discriminated from rheumatism arising purely from exposure, or from attending blood poverty or depravity. The vital necessities, uses and reciprocities of the various organs attacked—the antecedent relations of the patient to exanthematous disorder, or to renal disease, are to be examined into. The subtle and harlequin disturbances of the organic system or cerebro-spinal axis, &c., these and other states are to be critically investigated. Besides, in rheumatic affections, as in other diseases, there is always more or less disorder of the nutrition of the structures, and the local condition of pain may be owing to an obstruction to the nutritive performances of the tissue itself, as well as to a general but specific depravation of the whole blood.

Elsewhere in these lectures, we find some valuable and discriminative points; but in the opening ones on rheumatism there is a decided neglect of these clinical comparisons. But Dr. Todd has clearly enunciated his views respecting the eliminative actions and periods ensuing in this disease, and the danger attending the colliquant sweatings, so frequently continuing after their proper time. Dr. Todd also strongly advocates the use of opium in anæmia of the brain attended with delirium in rheumatism. He also practically attracts attention to the urine and its eliminative deposits during the disease. But with this attention, we must urge great caution as to the administration of opium. We are satisfied, from extensive observation, that this drug frequently ushers in, by its paralyzing influence over the organic system and the vaso-motor nerves of the brain particularly, the very effusion so much to be dreaded, and which is a natural incident in the terminating course of the disease, and against which practically scientific men direct their remedies. Hence we cannot be too cautious in its administration; and this, too, particularly when the kidneys, bowels and liver are making either normal or excessive actions of depuration. We have seen dropsy or effusion immediately supervene after its use, the eliminative actions of the kidneys, bowels and liver being suddenly arrested in their eliminative actions, both fluid and solid. And the same has followed the unscientific employment of *acid* tonics, or hæmagenic remedies, whereby the ammonia combining with the uric acid has been proportionately neutralized at the expense of retarding the egress of the latter from the system, or of altogether restraining it, to the

vast injury of the patient. Nor do we see any mention of the influences of remedial applications over the cardiac or renal regions, in disturbances of these organs in rheumatism.

Our space, however, will not permit further discussion of this most attractive volume. But we cannot close without commending for adoption the spirit in which this open publication of the author's views has been made. But too many medical writers satisfy themselves in producing a book, with a well-disguised re-hash of the opinions of others, and without much self-committal or originality. The honest and frank avowal of these pages, even if they were filled with errors, is far preferable to old repetitions, (truths though they may be,) re-dressed. An active error is even instructively better than a sleepy truth. One incites investigation, denial, and discussion. The other retains but its new clothes to attract to its inanimation.

But, alas! since the publication of this volume, the active and well-stored brain of its author has ceased to work. Death, ever busy with prince or peasant, the gifted or the idiotic, has spared not *him*, whose life for a long period of years had been devoted to the exercise of humanities, and to the explorations of a science whose aim has ever been against the ravages of the ruthless destroyer. Full of honors, conscious of the power invested in him to sift the golden sand from the sable—trusting to the sustaining hand that was pleased from evermore to link the creature with the Creator—with hope from previous health—with anticipations of a coming age to be made honorable by past exertion and daily addition—and, without a doubt, when called "to cease work," of the soul's futurition—he, the gifted and the trusting, has been summoned away, leaving us, his brothers, to mourn an instructor, to admire his untiring zeal, and to be grateful for his services now passed forever. *Sic nobis.* H. P. D.

On the Diseases, Injuries and Malformations of the Rectum and Anus, with Remarks on Habitual Constipation. By T. J. Ashton, Surgeon to the Blenheim Dispensary, &c., &c. Philadelphia: Blanchard & Lea. 8vo, pp. 292.

This volume is a reprint of the third English edition, of which the author says in his preface, that it has been carefully revised, and to which some wood-cuts have been added as illustrations. The topics of its chapters are as follows: 1, Irritation and Itching of the Anus; 2, Inflammation and Excoriation of the Anus; 3, Excrescences of the

Anal Region; 4, Contraction of the Anus; 5, Fissure of the Anus and lower part of the Rectum; 6, Neuralgia of the Anus and Extremity of the Rectum; 7, Inflammation of the Rectum; 8, Ulceration of the Rectum; 9, Hæmorrhoidal Affections; 10, Enlargement of Hæmorrhoidal Veins; 11, Prolapsus of the Rectum; 12, Abscess near the Rectum; 13, Fistula in Ano; 14, Polypi of the Rectum; 15, Stricture of the Rectum; 16, Malignant Diseases of the Rectum; 17, Injuries of the Rectum; 18, Foreign Bodies in the Rectum; 19, Malformations of the Rectum; 20, Habitual Constipation.

It will thus be seen that all those diseases to which this portion of the body is subject, receive more or less attention, and the volume thus becomes a convenient *hand-book* for the general practitioner. It is proper to mention, that Mr. Ashton is not exclusively devoted to the treatment of this class of diseases, and his remarks concerning specialties are worthy of repetition.

" In past ages and in the present time, a popular idea has prevailed that a deeper knowledge of, and a more intimate acquaintance with, the diseases of any certain organ, is obtained by an exclusive consideration of that particular part; but no greater fallacy can be conceived, it being only by a comprehensive view, and after due consideration of all the symptoms produced, and the various phases presented by disordered function and organic change in the various parts of the animal economy, that a just conclusion as to the *fons et origo mali* can be arrived at."

We confess that the teachings of an author who holds such opinions have far more weight with us than those of one who considers the seat of his specialty, whether it be the eye or the rectum, or any other part, as the principal part of the man, to which all the rest of his organization is subsidiary.

Taking the book as a whole, it is sensible and judicious, the author making no attempt to dazzle by bringing forward some new treatment for any disease, and never appearing to ride a hobby. We should be glad to take up the topics of all the chapters, in succession, but must limit these remarks to a few of them.

Fissure of the anus and the lower part of the rectum, or, as some writers have called it, " irritable ulcer of the rectum," is thus spoken of:

" In the majority of cases, the lesion is confined to the mucous membrane only, but occasionally extends to the submucous cellular tissue, or even to the muscular fibres of the sphincter: the inferior extremity of the fissure is usually immediately within the margin of the external sphincter, or implicates the skin at the margin to a slight extent, but

is not unfrequently situated higher up." This fissure may become an ulcer, but the treatment and the result will be the same, though, if ulcerated, a longer time is required for a cure. If the fissure is a recent one, Mr. Ashton does not do any operation, but orders ablutions with soap and water every night and morning, the injection of half a pint of cold or tepid water after the evacuation of the bowels, and when this has been ejected, a small piece of lint, saturated with the following lotion, or one of similar properties, must be kept applied to the part:

℞.—Plumbi acetatis,	gr. x.
Liquoris opii sedativi,	♏ xx.
Aquæ sambuci,	f℥iv. M.

Belladonna ointment (ʒi. to ℥i.) to be used if there is some spasm of the sphincter. Any unnatural condition of the secretions or excretions is to be attended to, and the habits and manner of living of the patient to be corrected if faulty. If the fissure is transformed into an indolent ulcer, it is to be touched with nitrate of silver two or three times, with several days interval. The enemata and belladonna ointment to be continued. When this fails to cure, incision may be made through the ulcer, but *not* to divide the sphincter, the knife going through the mucous membrane only.

The chapter on hæmorrhoidal affections is quite full, and contains several things of interest and value. We are glad to see the proper distinction made between hæmorrhoids and enlargement of the hæmorrhoidal veins. To confound these different conditions is a very common error of the profession, and may lead, as we believe in some instances it has done, to serious results. To transfix and ligate an internal pile is a good operation, but to do the same thing to an enlarged vein—well, we would rather not do it. Then, too, the use of nitric acid for removing hæmorrhoids is thus compared with the ligature: "When the tumors are sessile, with florid granular surfaces, looking like half a strawberry, the application of it (nitric acid) is the preferable plan of treatment; but if the piles are large and pendulous, the ligature ought to be used." Three cases of perforation of the recto-vaginal septum by the use of acid for large growths have come to the author's notice. The ligature is, of course, preferred to the knife in internal piles, it being the safer mode of operating. Indeed, no one who is not exceedingly rash from conceit or ignorance, would now think of cutting off the internal tumors.

For external piles, he prefers the knife to the scissors, a *choice* which should always be made when practicable. The clean cut of the knife-

edge heals much more satisfactorily than the bruised surface left by the scissors. The chapter on fistula in ano is also an excellent one, and several points are marked for especial notice, which we are compelled to pass without comment. The remarks on habitual constipation seem to be briefer than they ought, but a careful reading of them will convince one that there is but little to be added to them. We are glad to see that Mr. Ashton, as well as other writers, commend the light wines for the use of invalids in preference to Port, Sherry, and Madeira. The dry wines of France, Germany, Spain, Portugal, Hungary, and Italy, are all of them preferable in their effects, while it is no small point to most purchasers that they may be more easily obtained pure and at a much lower rate. Before long our own country will, doubtless, produce good light wines; but at present, most of the wines are too fiery. As to the several wines of home manufacture, especially such as currant wine, we can only advise our patients to shun them. They are poor mixtures to the taste, and poorer for the stomach.

In commending this volume to the profession, we add, that it is printed in the most excellent style of the publishers. E. H. P.

Memoranda Medica; or, Note-Book of Medical Principles: Being a Concise Syllabus of Ætiology, Semeiology, General Pathology, Nosology, and General Therapeutics. With a Glossary. For the Use of Students. By HENRY HARTSHORNE, A.M., M.D., Professor of Theory and Practice of Medicine in the Medical Department of Pennsylvania College; Physician to the Protestant Episcopal Hospital of Philadelphia; Fellow of the Philadelphia College of Physicians, etc. Philadelphia: J. B. Lippincott & Co. 1860.

Thus reads the rather full title-page of an unpretending little octavo of nearly 190 pages.

But its title truly indicates its nature and purpose. Its pages satisfy the object proposed. Its preparation was prompted by the long felt want of a brief, lucid, and *available* manual of *Medical Principles;* and, indeed, though modestly offered as only an *outline* or *partial substitute* for such a work, for the use of students, it presents so much positive information of medical knowledge as it is developed up to the present day, that every practicing physician, unless fresh from our best colleges, or unless he has more inclination and time for continued study than the majority of our practitioners evince, would be greatly instructed by a careful perusal, and he and his patients vastly benefited by carrying its *principles* directly into his *practice.*

The classifications of the causes of disease, of its signs and symptoms, of the circumstances as to its seat and nature, of the individual diseases, of remedies, and of the modes of treatment, are, each, logical, convenient and practical. The definitions given are, in most cases, peculiarly adequate, plain and correct; the views advanced, generally, free from theories, rigidly in accordance with ascertained facts; and the language, throughout, perspicuous and concise. Its concluding maxims are:

1. All pathology is but the physiology of organic perturbations.
2. Never interfere actively in disease without a distinct object.
3. Act only upon scientific reason, or well-defined experience.
4. Treat the cause of disease whenever it is possible.
5. Watch always, and treat when requisite, the condition of the patient.
6. Avoid, especially, routine treatment according to the names of diseases.
7. Use no violence with self-limited diseases.

I believe that a sound "theory of medicine" may be expressed in a single paragraph, thus:

Physiological optimism is the aggregate tendency of all the forces of the living organism, under the controlling influence of the vital force. But, the best possible result in a given case may, from its conditions and circumstances, fall far short of health. Medicine, then, is to favor or supply those conditions which, under natural laws, allow or promote the best result.

In aiming to fulfill this duty, the art of healing must always depend, in part, upon empirical observation, (which every branch of knowledge requires,) and in part upon inductive science. But in both alike, the physician is, or should be, "*naturæ minister et interpres.*"

As we look over its pages again, we stop to re-read, and feel tempted to make quotations from every page. But we forbear quoting more from a little volume so well worth its price, *(only One Dollar,)* that we most strongly urge every one who reads this notice, be he student or practitioner, to procure a copy for himself. We hope that the whole medical press and profession will not fail to accord to the author the appreciation he deserves, and that the promised additional practical memoranda may soon appear.

Of the character of the externals and mechanical execution, we need say nothing, after having mentioned the names of the distinguished publishers. L. E.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. Gibbs, M.D., Frewsburg, N. Y.

Dysentery.—In the *N. A. Medico-Chirurgical Review*, for September, Dr. H. P. Ayres, M.D., of Fort Wayne, Indiana, has an article upon the nature and treatment of dysentery. If we rightly understand the author, he believes the disease to have its origin in a specific poison, while in its nature it is essentially an inflammation.

Thus he says, "Strychnine or arsenic will produce their results in the torrid, frigid, or temperate zones; ergot will affect the strong and the weak in a similar manner; veratrum viride will produce like results on a thousand different patients, however circumstanced in relation to locality, food, water, or other causes. So is it in dysentery: there must be an agent generated or introduced into the system, possibly arising from a multiplicity of external causes; yet, whenever and wherever it is generated, a part or all of the phenomena of dysentery will appear." Does Dr. Ayers wish to be understood as saying, that where an epidemic of dysentery appears, that every person that is subject to the action of the dysentery-producing morbid agent suffers from an attack of the disease, as surely as a man would suffer from a poisonous dose of arsenic? And, conversely, that those who escape the disease have not felt the morbid agent or epidemic influence?

He says, further, "The characteristics of dysentery are the same in all countries and in all latitudes, and there must be similar causes producing such a uniformity in results. Dysentery is but the manifestation of another disease, but in point of treatment it is a distinct local inflammation. The primitive diseased part is the blood, which may have been changed from its normal condition by animal, mineral, aerial, or vegetable poisons, received through the skin, lungs, or stomach; but whenever and however it originates, it, by the law of election belonging to some diseases and medicines, invariably manifests itself in the colon and rectum."

We quote the author's concluding remarks in regard to treatment: "In 1845, we treated dysentery strictly as an inflammatory disease, using venesection and other antiphlogistic remedies; in 1854, as a subacute, in which an evacuation of the alimentary canal and astringents constituted the successful treatment; in 1856, as a subacute kept up by a morbid state of the liver, spleen, and other organs, in which cathartics were absolutely necessary. In each of these years there were instances of chronic, typhoid, and ulcerative states of dysentery, which may form the subject of another paper. Here, we think, is the reason of the great discrepancy in the treatment of dysentery: the peculiar character or type has not been sufficiently illustrated in which calomel, venesection, ipecac, opium, and the various remedies which have been and are reputed as specifics, have been successful; and yet in the hands of others have entirely failed. It is true, Cullen, Sauvages, and Linnæus, have not placed it among inflammatory diseases; but, with all deference to those who differ, dysentery should have the same place in our nomenclature as pleuritis, gastritis, or metritis. In each of these the proper treatment has long been settled by the profession, but with no better reasons than would apply to dysentery. It is not necessary, in all cases of pleuritis or metritis, to bleed, or give tartar-emetic or calomel; we use such reme-

dies according to the exigencies of the case, but we always keep in mind the inflammatory character of such diseases. Just so do we think respecting dysentery. Place it among our inflammatory diseases, and the treatment will become as uniform as in pneumonia or pleuritis, which may or may not be complicated, like dysentery, with other diseases. I am aware many treat it as an inflammatory disease, and would repudiate any other treatment; but, nevertheless, the prevailing feeling with the profession is, to have a specific in dysentery, when it can alone be successfully treated on general principles."

Tracheotomy.—In the *N. A. Medico-Chirurgical Review*, for September, Dr. C. S. Fenner, of Memphis, Tennessee, has an article upon tracheotomy in croup. He reports five cases occurring in his own practice, in two of which the operation was successful, and in three a failure.

After reviewing the literature of this operation, and the history of its results, Dr. Fenner concludes his paper with the following remark: "My own opinion is, that it should never be performed except as a *dernier ressort*, when every other remedy has failed and deaths seems inevitable."

Local Treatment of Gleet.—In the *N. A. Medico-Chirurgical Review*, for September, Dr. G. P. Hachenburg, of Springfield, Ohio, has an article on the treatment of gleet by compression. He says, "The instrument which I use for this purpose is made of different sizes, and is composed of ivory, or horn highly polished, and is simply a short bougie with a button or shoulder turned at one end, to prevent it from slipping into the urethra. The following method may be observed in its use: Before its introduction, at bedtime, the urethra should be well washed out with Castile soap and water, followed by a mild astringent lotion. An instrument of a size which will well fill the urethra is then oiled, and with gentleness introduced. In a short time the passage will accurately and tenaciously grasp the instrument, and it is retained for the night without support or bandage. In the morning it is removed, followed by another cleansing process, which is repeated occasionally through the day. The application should be renewed every third or fourth night, until the cure is accomplished, which will occur after the third or sixth application. In removing the instrument in the morning, there is sometimes a difficulty in getting it out of the urethra, so firmly is it held within its grasp. A gentle rotatory movement, however, will soon disengage it, its exit being then readily accomplished by traction."

Pleuro-Pneumonia of Neat Cattle.—In many sections of the country the disease just mentioned has proved very destructive to cattle, and ruinous to many a farmer's interest. The subject should not be considered beneath the attention of the physician. The Governor of Ohio appointed a commission to investigate the subject, and one of the members of that commission, J. H. Klippart, makes a report in the August number of the *Columbus Review.* We make an extract or two. "The disease of neat cattle, called pleuro-pneumonia, has, at times, prevailed extensively in Central Europe, for several centuries." He believes the disease to have its origin in a specific poison, and that it is propagated, like small-pox, by contagion, and, consequently, he advises a separation of the sick from the well.

The most important point in Mr. Klippart's communication, if true, is that, like small-pox, the disease may be prevented by inoculation. He says, "As a prophylactic, inoculation of the tail of healthy animals, with matter taken from diseased lungs in the second stage of the disease, has been very successfully

practiced in Europe. The animals which have been properly inoculated exhibit certain characteristic symptoms, and frequently lose part of the tail, but almost always recover, and are then free from danger."

In the *Boston Medical and Surgical Journal*, for August 23d, a correspondent reports a case in which prompt relief followed the administration of *fusil oil.* The oil was first given in ten-drop doses, frequently repeated. Benefit followed each dose; two teaspoonsful were given at once. The writer says after this "I did not see her again for three hours, when she appeared completely relieved."

Poisoning with Strychnine.—In the *Lancet and Observer*, for September, Dr. H. G. Thomas, of Alliance, Ohio, reports a case in which *five grains* of strychnine were taken, and *one and three-fourth hours* elapsed before symptoms of poisoning occurred. Large doses of the sulphate of zinc were given, and the patient recovered. In this case, as in one previously referred to, we think the strychnine was not pure, or that full five grains *were not* taken. It is contrary to the usual habits of this agent to delay its action for nearly two hours. However, as the patient was a hard drinker, and took a large dose of whiskey after taking the strychnine, it is possible his stomach was not in condition favorable for absorption; or, as it is well known that one poison often counteracts the effects of another, it is possible the whiskey acted remedially; or, still, it is possible that having been long accustomed to the action of one poison, he was less sensitive to the action of another.

Bismuth in Severe Burns.—In a former number of our *Summary*, we referred to an article by Professor Richardson, in which bismuth and glycerine were strongly recommended as an application to severe burns, covered with a layer of soft cotton. In the *Lancet and Observer*, for September, Dr. W. P. Rush, of Indiana, adds his testimony in favor of the same combination. He says, "I have never used anything in cases of severe burns that gave so much satisfaction as the bismuth and glycerine, recommended by Professor Richardson." In two cases of very severe burns, in which he used it, he says, "The bismuth could not be had until the third day; but after the removal of the first application (cotton and oil) from the two surviving men, and the application of the bismuth, relief was almost immediate."

We can see one objection to this preparation in some cases: that is, its cost. We once treated an extensive burn, through a period of fourteen months, until cured, with white-lead and linseed oil.

The pecuniary circumstances of the patient and friends were not such as to enable them to pay a physician, or even to buy medicines. Gallons of the white paint were used—the same quantity of bismuth and glycerine would have been a heavy tax upon the attending physician, and we doubt whether with corresponding advantage. We have no doubt it is an excellent application; but the question is, is it better than the cheaper one of white-lead paint, which we and others have found to answer most admirably as a dressing for severe burns.

Sympathetic Ophthalmitis.—In the *Chicago Medical Journal*, for September, Dr. E. L. Holmes has an article upon the subject of sympathetic ophthalmitis. It is well known to every surgeon that where one eye is lost by intra-ocular inflammation, whether idiopathic or traumatic, the other eye frequently becomes, and is always *liable* to become inflamed. Of this sympathetic inflammation, Dr. Mackenzie says, "Whenever I see sympathetic ophthalmitis, even in its first

stage, I know that I have to contend with an affection which, however slight its present symptoms may be, is one of the most dangerous inflammations to which the organ of vision is exposed."

Against this sympathetic disease, Dr. Holmes recommends preventive treatment, which "consists in the partial or total extirpation of the injured eye, before the least symptom of inflammation has appeared in the other eye." * * "We consider it as the duty of every surgeon in those cases where vision is lost, to advise either the total or partial extirpation of the eye, before the symptoms of disease appear in the other eye. We believe it is better to pursue this course, even in a large number of cases where the sound eye might possibly have escaped, than to run the risk, in a single instance, of losing both eyes."

Treatment of Inflammations.—It may be known to most of our readers that Professor Austin Flint, in the treatment of inflammations, puts in requisition the so-called antiphlogistic measures less than the great mass of physicians. In the *American Medical Times*, for September 1st, he reports a case of pneumonia, complicated with pericarditis and dropsy, that was treated with quinine, iron, whiskey, &c., and recovered. In regard to antiplogistics, as bloodletting, purgatives, mercurials, vesication, and low diet, in reference to this particular case, he says, "Had we followed out such a plan of treatment, I do not hesitate to say that I believe we should not only have failed to save the life of our patient, but our measures would have aided the destructive tendency of the associated diseases."

A further quotation or two will show the author's views in regard to the objects of treatment. "We may assert, as an axiom in the practice of medicine, that, whenever any disease tends to destroy life by asthenia or exhaustion, the sustaining treatment is indicated, and in proportion to this tendency is it of paramount importance to employ with efficiency measures to support the powers of life. This principle takes precedence of all the therapeutical indications pertaining to particular diseases. Experience and reasoning may show that such or such diseases are often influenced favorably by such or such remedies; but whenever there is danger to life in consequence of defective power in the system to resist disease, then the means of supporting and increasing this power of resistance supersedes all others, and measures having reference to the process which constitutes the disease are contra-indicated, if they conflict with the sustaining treatment. We have remarkable examples of the power of sustaining measures in certain cases of the fevers which have a self-limited career. A patient with typhus may present symptoms which would lead us to look for death hourly, and if by means of alcohol and nutriment given without stint, and almost without limit, we can succeed in preventing the flame of life from going out for one or two days, the danger is passed, the disease has run its course, and the patient enters at once upon convalescence. The same holds good measurably with most acute inflammations. These may be said usually to have a self-limited course." * * * "In the management of acute affections of all descriptions, the physician should direct his attention, not to the disease alone, but to the patient." * * * "The measures which are directed to the local affection are often antagonistical to those which the general condition claims."

Inflammatory Affections of the Female Breasts.—In the *Chicago Medical Examiner* for September, Prof. W. H. Byford has an elaborate article, 34 pages in length, upon the subject just mentioned. Our space will not justify us in fol-

lowing Prof. Byford through the various divisions of his subject, detailing causes, &c. We can only give a brief summary of treatment. It may be well to observe in the outset, that Prof. Byford believes that cracked and excoriated nipples are more common than formerly, because the skin covering the nipple is rendered soft and tender by the extraneous covering worn by a vast majority of females in compliance with the demands of fashion. He also believes that absent and imperfect nipples are mostly the result of imprudent pressure upon the breasts by stays, and in tight lacing. Prevention is better than cure, and to this end he says, "The nipple, therefore, should be covered lightly during pregnancy and nursing. The thinner and more permeable the covering the better. It should be of such a character as freely to admit the air. At the same time it should be subjected pretty constantly to moderately rough friction. An excellent dressing for the nipple for the last two months is a rough, coarse sponge, so cut as to cover the areola, surrounded and covered loosely, but to touch every part of the nipple. Over this there should be but one thin thickness of goods, so as to allow of the evaporation of fluids as fast as secreted, and the free admission of atmospheric air." * * * "During lactation the same exposure to air and lightness of covering should be observed, and after nursing, the nipple should be wiped clean and dry before being returned under the clothing. This is a rule that should never be neglected." When cracks or abrasions of the nipple have taken place, producing much suffering at each attempt at nursing, much can be done, in aid of cure, by a judicious selection of shields. These should be so selected for individual cases as to take off pressure from the part diseased. "When the cracks are deep, it is indispensable to quick cure, that they should be closed up, and kept so until complete adhesion of their sides takes place. This may usually be done with great facility in the following manner, viz.: Press the nipple in such a way as to close the crack, and while thus holding it, apply a thick layer of collodion over the surface. We should apply the layer thickly, and have it extend some distance in every direction, so that it will keep the crack together. The collodion is not easily sucked off by the child, and if the nipple shield be used, it need not be disturbed at all until completely healed. We should watch the coat of collodion, and renew it when it seems to be becoming deficient by violence of nursing." In excoriations or ulcerations of the nipples, mucilaginous and astringent applications are indicated. Mucilage of gum-arabic, glycerine, &c., with tannin, kino, (catechu is not mentioned, and it really is the very best vegetable astringent in such cases.) sulph. zinc, nitrate of silver, &c. We give the following as a sample of his formula:

"℞.—Glycerine, ʒij.
Sodæ subborat., ʒss.
Aquæ rosæ, ℥iss. Mix.

Use as a wash each time after nursing."

In chronic cases, he says, "The nitrate of silver has done the most good in my hands."

In the treatment of inflammation and abscess of the breast, the treatment resolves itself into preventive and curative. As an imperfect nipple is among the most common causes, it is important that any defect here should receive early attention. It is too late to remedy this when the breast is already inflamed. Previous to labor, during the months of pregnancy, is the time to give

this matter attention. Various means are spoken of by Prof. Byford for developing the nipple, but we have not space for their enumeration. We mention one not alluded to by him, nor any one else, so far as we know. In cases where the nipple is known to be absent, or but very imperfectly developed, and where it is expected such a development will soon be needed, a cup should be constructed, the cavity of which is of the shape of a model nipple; to this should be attached a stop-cock, as in the cupping-glasses, fitted to pump-exhausters. These should be frequently applied, and exhausted by means of a pump, the stop-cock turned, and worn for a time. This process, if continued for a sufficient length of time, we think will not fail in developing a nipple sufficient for all purposes of nursing.

When inflammation has commenced, he thinks the breasts should be kept emptied of milk. To do this he says, "The only proper thing for drawing the milk is the mouth." If the mouth only is used, his advice is judicious; but we are confident it is far better to let the breasts entirely alone than to adopt the harsh measures frequently resorted to to evacuate the milk. Belladonna may be applied, he says, but he does not give us the results of his experience with this agent. In fact, we think he does not sufficiently insist upon it. We have used it many times, and have never seen an inflamed breast terminate in suppuration, when we saw and commenced with the belladonna early. Generally we anticipate the inflammation; where the child is still-born, or the nipple is so defective as to prohibit its use, we commence *at once* with the belladonna, and the milk secretion is arrested. He speaks highly of "A bladder partly filled with ice and water, with a piece of flannel between it and the skin;" he says it will serve a good purpose. "Opium in large doses, so as to keep the patient very thoroughly under its influence, aids very much in arresting the secretion of milk." * * * "For internal treatment a saline cathartic every other day, and two grains of iodide of potassium every four hours, may be relied upon as materially aiding the other treatment." In some cases blood-letting and veratrum viride may be required. Dr. Byford has great faith in the last-mentioned in arresting inflammations.

When suppuration has taken place, "there can be no doubt, I think, that the earlier the matter is let out the better, for several reasons. The cavity becomes larger by allowing it to remain; it burrows through the surrounding tissues; the longer it remains, the greater the amount and duration of the irritative fever that accompanies its retention."

Typhoid Fever.--In the *Atlanta Medical and Surgical Journal* for August, Dr. V. H. Taliaferro has an article upon the subject of typhoid fever; he advances a new theory in regard to its nature, and has a few remarks upon treatment. He does not believe the disease to be essentially enteric, as regarded by many, for reasons which we have not room to state. He believes the disease to have its origin in a specific poison, and says, "Now, we beg leave to claim that this poison arises from a disturbance of the *cutaneous functions, whereby the perspiratory fluids are in part retained in the circulating mass*, poisoning and contaminating the whole, and paralyzing, as it were, the performance of the normal functions of the nervous centres, by the intensity of its action." In regard to his theory of the nature of this disease, Dr. Taliaferro says. "If objections are found to it which can be sustained, we would be glad to know them through the medical press." It seems to us that it would not be

difficult to find such objections, but we have not space at command to state them in full. We may, however, remark that, if the theory is correct in all cases where the perspiratory secretions are arrested. or materially suppressed, we should get a typhoid fever. Such is not the ordinary result, and we may state this as objection first. In the second place, we have no evidence that a disturbance in the exhalating function of the skin precedes the febrile action in any considerable number of the cases of typhoid fever. And, in the third place, if a suppression of the function of the skin is the primary pathological condition in this disease, as the sympathetic connection between the skin on the one hand, and the lungs and kidneys on the other, is more intimate than between the skin and bowels, the more constant pathological lesion should be found in the lungs or kidneys, and *not* in the glands of Peyer, as is well known to be the case.

In regard to treatment Dr. Taliaferro says, "Our remedies should be directed to the fulfillment of two important indications, viz.: the deranged condition of the cutaneous functions, and its consequent effects upon the system, embracing more particularly the nervous and circulatory systems, and the intestinal canal, with its mucous glandulæ." The first thing which he recommends is a thorough cleansing of the surface of the body "with tepid water and soap, with a *coarse towel.*" This is to be repeated *every morning*. In addition to the morning washing the patient is to have "every night his *entire surface* well greased" with lard, bacon-rind, or olive oil. If lard or oil is used, "they should contain as much *salt* as they can be made to dissolve."

In regard to medicines he recommends the following:

"℞.—Chlorat. potas. sat. sol., ℥viij.
Tinc. verat. viride, ʒj."

A table-spoonful of this is to be given every three or four hours, through the day only, and a dose of opium at bedtime, and the patient left undisturbed until morning. Rich food, frequently administered, with a judicious use of stimulants, he regards of the first importance. We confess that we like his treatment better than his theory.

Chloroform in Congestive Chills.—In the *Oglethorpe Medical and Surgical Journal* for July, Prof. H. L. Byrd has an article upon the treatment of congestive chills with chloroform by inhalation. On a former occasion we called attention to an article upon the same subject, by Dr. Keator, of Louisiana. The last-named gentleman introduced the chloroform into the stomach, while Prof. Byrd gives it by inhalation. He says, "My impression is that chloroform inhaled during the cold stage of fever, or in a 'congestive chill,' to the extent of making a decided impression upon the system, is perhaps the most valuable remedy known to the profession."

He says further, "With *chloroform* and *quinic ether* at hand, I predict that the heretofore fatal 'congestive chills,' which have been regarded with so much terror by the physicians of the Southwestern States, will be as easily managed as any of the milder grades of miasmatic fever."

Strychnine in Typhoid Fever.—In a clinical lecture, delivered at the *Mercy Hospital*, and reported for, and published in the *Chicago Medical Examiner*, Prof. N. S. Davis remarks upon the treatment of a bad case of typhoid fever. Quinine, alcohol, turpentine, &c., had been used, and yet the patient continued

to sink. At this juncture, in connection with the turpentine, a tea-spoonful of the following mixture was given, and directed to be repeated every four hours:

" ℞.—Strychnine,	1 gr.
Nitric Acid,	ʒj.
Tinc. Opii,	ʒij.
Water,	℥ij."

From this date the patient improved rapidly. In reference to the use of Strychnine in continued fever, the doctor remarked, that in many cases between the fifth and fifteenth days, the impulse of the heart becomes weak, the voluntary muscles unsteady, the capillary circulation feeble, with an evident tendency to passive congestions in some of the internal viscera; and in such, he had seldom failed to find the remedy strikingly beneficial.

In a Review, which we prepared, of Dr. Reeves' work on Enteric Fever, and published in the MONTHLY for September, 1859, we made use of the following language: "There is one agent that Dr. Reeves has not alluded to, which, because of its peculiar adaptation to certain conditions frequently present in enteric fever, should not be passed over in silence. When there is subsultus tendinum, low, muttering delirium, and the evacuations are involuntarily discharged, all showing a complete prostration of the nervous system, there is probably no combination of medicines equal to *strychnine*, which may be beneficially combined with small doses of opium." So far as we know, we were the first to use and advise strychnine in typhoid fever, and we are glad to see that so able an authority and judicious an observer as Prof. Davis should coincide with us in opinion.

Inguinal Aneurism Cured by Digital Compression.—In the *N. O. Medical and Surgical Journal*, for September, Dr. W. C. Nichols reports the case of an inguinal aneurism cured by digital compression. The tumor was about the size of a goose-egg, situated in the right groin, above Poupart's ligament. Dr. Nichols says, " Satisfied that all pulsation in the tumor could be checked by pressing the thumb on the course of the artery, I felt assured that by securing competent assistants, the flow of blood into the aneurism could be moderated a sufficient length of time to promote the fibrination of its contents, and effect a cure." Twenty-four assistants were obtained, and " the treatment was begun by thrusting the thumb directly against the neck of the sac, so that all pulsation was speedily arrested. Morphine in full doses was given to the patient to benumb sensibility, and pressure was continued by an alternation of assistants." " After making pressure for *thirty hours*, all pulsation ceased; and within *forty hours* the cure was announced as successful; and within *fifty-four hours*, our watch over the patient was withheld." The reporter says, the aneurismal tumor has " contracted to a firm nucleus about the size of a walnut." Six months later, though the patient has undergone great muscular exertion, the cure remains complete.

Post-Partum Hæmorrhage.—In the *Charleston Medical Journal and Review*, for September, Professor T. G. Thomas has an able article upon the subject of post-partum hæmorrhage and its treatment. We have space only for a few remarks in regard to treatment. The indications to be fulfilled are the following:

"(a.) *Prevent death by syncope or exhaustion.*

(b.) *Remove aught preventing uterine contraction.*

(c.) *Force the uterine fibres to contract.*"

The means for accomplishing these indications are: "1. Throw open the windows and admit a current of air. 2. Pull the pillows from under the head. 3. Give brandy and ammonia, if necessary. 4. Let an assistant stand ready to dash cold water into the face. All this will occupy scarcely as much time as it has taken to relate it; certainly not more than a minute, if intelligent and active aids are at hand." The above means are appropriate for the fulfillment of the first indication. For the second, "Let the coat now be thrown off, and the hand passed up to the fundus uteri. in spite of the cries and resistance of the patient, and frequently the entreaties of her friends. There let the fingers be moved about gently, so as to titillate the uterine fibres, and cause them to contract; then let the indication be fulfilled; let whatever defeats full contraction and closure of the uterine vessels be removed. Should it be an adherent placenta, let it be peeled off; should it be clots of blood, or these with a detached placenta, let them be scooped out; and should it even be a second child, let it be delivered. In a very trivial case of hæmorrhage, pressure on the fundus uteri, or the use of ergot, might accomplish this indication; but in a really severe case, nothing less than the means advised can be relied on.

"In accomplishing the second indication, we simultaneously accomplish the third, for no means so surely force the uterine fibres to contract as the introduction of the hand into that organ. Other means, however, of great force and certainty, must be likewise adopted. 1. Keeping one hand in utero, grasp and knead the fundus with the other. 2. Order an assistant, *while you are thus engaged*, to pour a stream of water, from about four feet above, on the uterus. 3. Still occupying the hands as above mentioned, order a full dose of ergot to be given. 4. Pass a lump of ice into the vagina, and, if necessary, the uterus. 5. Throw an enema of ice-cold water into the rectum. By a faithful application of these means, the obstetrician will, in a vast majority of cases, be gratified by success; they will generally rapidly produce full contraction, and check the flow."

Parturient Hæmorrhage.—As allied to the subject of *post-partum hæmorrhage*, just referred to, we would call attention to an able paper by the same author, Dr. T. Gaillard Thomas, in the *American Medical Times*, for Sept. 29th, upon parturient hæmorrhage. However much we might desire to give a synopsis of the lecture, our space forbids. We shall, however, quote a few remarks upon the use of the tampon in these cases. He says of the tampon, "After the seventh month of pregnancy the uterus is so large that it may contain a sufficient amount of blood to produce death, so that from this period to the completion of labor it is always attended by danger. *(I need not insist upon the gross impropriety of the employment of such a means after delivery.)* Thus, then, although the tampon might effect much for us in parturient hæmorrhage, *as a rule*, it *should not* be employed; and, in exceptional cases which demand it, should be resorted to only after *mature consideration*, and its effects be watched with very careful scrutiny. Observe these rules in using it: Never employ the tampon *from* choice when there is a possibility of a dangerous internal hæmorrhage. At full term, do not employ it after the waters have been discharged, for then the uterus will accommodate a large amount of blood. Never employ it at full term after your patient has lost a great deal of blood, or from natural feebleness of body would be endangered by even a slight

hæmorrhage. In a strong woman who has not already lost a good deal of blood, in whom the uterus is contracting well, and whose bag of waters has not been ruptured, I would not hesitate to employ it if other means failed, or from any reason I deemed them inapplicable."

We refer to these opinions of Dr. Thomas with the more pleasure, because they correspond so exactly with our own, and because we know that many are in the habit of resorting to the tampon in uterine hæmorrhage, connected with labor, particularly if premature.

In the *Western Lancet* for September, 1857, speaking of the safety and reliability of the tampon, particularly in cases of abortion, we used the following language: "First, it (the tampon) is not *reliable*, because it does not remove the cause of the hæmorrhage, which is liable to recur at each removal of the tampon; neither does it perfectly and promptly arrest hæmorrhage, for however thoroughly the vagina may be plugged, it is still capable of containing more or less blood, and often hæmorrhage will continue until the uterus is distended to the size which it had attained previous to the occurrence of the abortion. Second, it is not always safe, for, if the patient has flooded until there is imminent danger of immediate death, the cavity of the womb will not unfrequently continue to receive blood, after the introduction of the tampon, quite sufficient to greatly enhance the danger, if not to prove actually fatal." Begging pardon for this intrusion of our own previously expressed opinions, we take this occasion to say that, however valuable the tampon may be in some cases, we believe its use should be mostly excluded from the lying-in chamber.

Dr. Thomas' lecture treats of hæmorrhage of an accidental character occurring previous to delivery, and if, in such cases, the recumbent posture, the local application of cold and astringents should not prove sufficient, and should the tampon be inappropriate, he would advise that *pressure be made direct against the bleeding vessels* by evacuating the waters, and increasing the pressure, if need be, by the administration of ergot. Should hæmorrhage continue, he would "*ligate the vessels* by evacuating the uterus, and causing firm contraction."

Explanatory.—A word of explanation at this point relative to our remarks made in a former *Summary* upon some cases of prolapse of the funis, in which the postural treatment was used with success. In those remarks we were made to use ambiguous language, so that some have supposed we gave the credit of that plan of treatment to Dr. Mendenhall, of Cincinnati, instead of Dr. T. G. Thomas, of New York. If there be any of our readers who received such an impression, we wish to correct it; and therefore state at this time, that this treatment was originally suggested by Dr. Thomas in a paper read before the N. Y. Academy of Medicine, Feb. 2, 1858, and published in the transactions of that body.

Union of Strands of Hair across the Incision in Wounds of the Scalp.—In a former number of our *Summary* we called attention to the suggestion of Prof. H. A. Campbell, in regard to the union of scalp wounds by fastening opposing strands of hair across the wound. In the *Southern Medical and Surgical Journal* for September, Dr. F. M. Pitts has an article upon the same subject. In reporting a case of severe scalp wound, he says, "In shaving the scalp small tufts of hair were left on either side of the wound, at points exactly opposite, and corresponding with the places of entrance and exit of sutures, if they had been used." The tufts of hair were fastened in the following manner:

"A sufficient number of ordinary duck-shot were perforated, and the united ends of each pair of tufts passed through a shot. The shot was then grasped by a strong pair of forceps, and passed down sufficiently to unite the edges of the wound, when it was mashed firmly, and the most complete and satisfactory fastening that I have seen for wounds of the scalp was furnished. A compress and bandage were applied, and union of the wound secured by first intention."

Quinine in the Treatment of Acute Rheumatism.—In the *Atlanta Medical and Surgical Journal* for September, Prof. J. G. Westmoreland has an article upon the treatment of rheumatism. He says, "Quinine is not more certain to arrest the progress of malarial fever than it is to allay the symptoms of rheumatism." He would give quinine in from five to ten grain doses, in combination with from one to two grains of opium. He says, "Quinine, in the treatment of rheumatism, as in fever, should be given in quantities sufficient to impress the nervous system fully." Further, and more specifically, he says, "In order to insure the tonic or invigorating influence of it upon the nervous centres, sufficient to counteract the disease, the amount of fifteen or twenty, and sometimes thirty grains is required."

Inflammatory Rheumatism.—In the *Medical and Surgical Reporter* for August 25th, Dr. W. H. White has an article upon the treatment of acute rheumatism with *iodide of potassium and belladonna.* The following is his formula:

"℞.—Potass. iod.,	ʒij.	
Tr. belladonna,	ʒij.	
Aq. cinnam.,	q. s. ft. ℥iv.	Mixture."

Of this a teaspoonful is to be given every four hours. In a case of severe character that had resisted the usual treatment, he brought it to bear, and says of its effects: "In the course of four or five days the patient was enabled to get around the house quite nimbly, though previously confined to his bed for about three weeks." In another case, in which the patient had suffered from a previous attack which had lasted for three months, the above treatment was instituted, and on the fourth day he was taking active exercise out of doors.

Dr. White does not claim this treatment to be original with himself; he says it is recommended in a paper found in the published transactions of the State Medical Society of Pennsylvania for 1858. The author's name is not given.

Oleum Chenopodii.—Dr. J. F. Meigs, in his service in the Pennsylvania Hospital, made the following clinical remarks, (see *Medical and Surgical Reporter* for August 18th:) "In cases of dyspepsia, which have resulted in chronic catarrh of the mucous membrane of the intestinal canal, and where there is complication with, or predisposition to intestinal worms, the *oleum chenopodii* I consider as one of the most valuable tonics. It seems to modify that peculiar condition of the mucous membrane which predisposes to the development of helminthæ, and to restore its tone. It may be given in doses of from 10 to 15 drops daily."

Remarks upon Arterial Murmurs and the Diagnostic Importance of these Murmurs relative to Anæmia.—In a *clinical lecture*, delivered at the *Long Island College Hospital*, and published in the *American Medical Times*, for September 15th, Prof. Austin Flint has a few remarks upon the subject just referred to, which we consider worthy of reproduction here. Prof. Flint says, "If a murmur be seated in the pulmonic artery, in an anæmic person, the proba-

bility is that it is inorganic, because, exclusive of congenital malformations, this artery is very rarely the seat of organic lesions. The coexistence of a pulmonic and an arterial murmur is also evidence of both being inorganic. How do we know that we have these two murmurs coexisting? This is a question which I believe I have not before answered, and it is one which I have not considered fully in my work on the Diseases of the Heart. We can usually settle this nice point in auscultation, by comparing the murmur as heard over the outer, and near the pulmonic artery. If a murmur heard in the second intercostal spaces, nigh to the sternum on both sides, have the same quality and pitch, the presumption is, that it is a single murmur, transmitted into both situations; but if the murmur, as heard on the two sides, differs in quality and pitch, the presumption is, that it is not a single murmur, but that there are two murmurs, one of which is aortic, and the other pulmonic; and clinical observation shows a difference in quality and pitch on the two sides to be not unfrequent. Another point relates to the second sound of the heart. We can interrogate, after a little practice, without difficulty, the second sound as produced at the aortic and pulmonic orifices separately, and distinguish the one from the other. Now, organic lesions at the aortic orifice generally, although not invariably, involve the semilunar valves, so as to impair the aortic second sound. If, therefore, we find the aortic second sound, and the pulmonic second sound, preserving their normal relation to each other, as regards intensity and quality, the presumption is, that an aortic murmur in a well-marked case of anæmia is organic. This presumption is strengthened by the absence of any enlargement of the heart, and because experience teaches us that aortic lesions generally lead, sooner or later, to cardiac enlargement.

Further evidence that murmurs at or near the external orifices are inorganic, is afforded by the coexistence of arterial murmurs in the subclavian and carotid arteries. Murmurs are often produced in these situations in anæmia, when they are not discovered near the heart. Here I wish to advert to a point concerning which, until lately, I have entertained an erroneous opinion. I refer to the quality of inorganic arterial murmurs. In my work on the diseases of the heart, I have stated that roughness is a distinctive characteristic of these murmurs. This is, I believe, the opinion generally held by experienced auscultators. An able reviewer in the *Dublin Quarterly Review*, however, has criticised my statement with regard to this point as too unqualified. Curiously enough, just before reading this reviewer, I had been led to the same conclusion by a case which came under my observation since the commencement of the present session. You will recollect the case I visited in consultation, the patient of a medical friend, in part with reference to the question whether there existed aneurism of the aorta or subclavian artery. Under the right clavicle there was a loud and distinctly rough murmur, which, naturally enough, suggested the idea of aneurism. No other signs of aneurism, however, existed. The patient was intensely anæmic, and death occurred a few days after my examination. I attended at the autopsy and brought away the heart, which I exhibited to the class, and made some remarks on the subject at that time. Both the heart and the arteries were entirely free from organic disease.

Another nice point in auscultation here suggests itself, to which I have not referred in my work on Diseases of the Heart, and which was suggested to my mind by a question made to me by a member of one of my private classes in

auscultation last winter. Suppose that we find an aortic murmur at the base of the heart, and a murmur in the carotid artery, the latter may be either transmitted from the aorta, or it may be produced within the carotid; can we determine which of these explanations is correct? We can generally do so by comparing the murmurs in the neck and at the base of the heart as respects pitch and quality of sound. A transmitted murmur preserves its pitch and quality, certainly as a rule. If, therefore, the murmur in the neck be the same murmur heard at the base of the heart, save only as regards intensity, it is transmitted; but if it differ in pitch or in quality in the situations, there are two murmurs, one produced in the aorta, and the other in the carotid."

Puerperal Fever Treated with Digitalis.—In the *American Medical Times* for Sept. 22d and 23d, Dr. Alex. Hadden, House Physician to *Bellevue Hospital*, reports two cases of puerperal fever successfully treated with digitalis. Our readers will remember that Prof. Fordyce Barker first called attention to the treatment of this disease with veratrum viride in the MONTHLY, for Nov., 1857, since which, several other physicians have adopted the same treatment.

The action of digitalis is doubtless similar to that of the veratrum viride. Upon this point, Dr. Hadden says: "The infus. digitalis was substituted for the verat. viride, because of the certainty of its action, in my hands, in cases of a different character, and without the unpleasant consequences that attend the administration of the verat. viride to the same extent." It is proper to observe that digitalis was not solely relied upon. Thus, he says: "We aimed to reduce the pulse no lower than 60, nor permitted it to rise above 80, without endeavoring to prevent it. Morphia was given, with a view to quiet pain effectually. Sulph. quinia was given when the surface of the body was cool and moist, pulse within the above range, even if under the influence of a sedative. Dr. Barker considers the quinia, given in large doses, under the above circumstances, in puerperal fever, as not only tonic, but sedative in its effects. I have verified the observation in many cases treated under my charge, and have, moreover, observed that the effects are more lasting."

Sponge Pessary.—The employment of pessaries was the subject for discussion before the Boston Society for Medical Improvement. From the report in the *Boston Medical and Surgical Journal*, for September 13th, we copy the following interesting remarks, made by one of the members: "Dr. Bigelow had seen, in a considerable number of cases, a multitude of instruments tried and thrown aside, because they failed of their object. He thought a well-adapted, proper-sized sponge made the most convenient pessary in cases of simple descent of the womb. At the subsequent meeting, Dr. Bigelow said that in corroboration of the above remarks, he had that day seen a lady who, four years ago, had tried various kinds of pessaries, under his direction, for a bad prolapse of the womb, without success, until he was fairly ashamed of putting her to so much trouble and expense. At last, he recommended the sponge pessary, which the patient had worn ever since, with perfect ease and relief. She introduces it every morning, and removes it at night. It is soft, elastic, and does not become incrusted from retention. She rolls up a flat piece of sponge, after moistening it, and introduces it by means of a cylinder of wood. In another case, the patient, a very old lady, who was troubled with great prolapsus, causing retention of urine, and often obliging her to push up the tumor before she could urinate, obtained perfect relief from the sponge pessary. Dr. Bigelow had seen more success from this form of pessary than from any other."

MONTHLY SUMMARY OF FOREIGN MEDICAL LITERATURE.

By Dr. L. Eisberg.

II. ANATOMY AND PHYSIOLOGY.

18. *Swallowing Pebble-Stones.* By W. A. Rackham. (London Lancet, August, 1860.)
19. *On Pulmonary Osmose, or Researches on Absorption and Exhalation by the Respiratory Organs.* By Dr. Louis Mandl. (Archives Générales de Médecine, July and August, 1860.)
20. *What is the Signification of the Heart's Throb?* By Joseph Maclise. (London Lancet, September, 1860.)
21. *On the Anatomy and Physiology of the Bones of the Ear and the Membrana Tympani.* By M. Bonnafont. (Revue Médicale; Gazette Médicale de Paris, August 11, 1860.)

18. An instance is related, displaying the power which nature possesses to remove from the system any foreign bodies with which it may be burdened: "In the month of August of last year, Charles B——, a child of six years old, residing in this village, swallowed within the space of a few hours the enormous number of 160 pebbles, of various shapes and sizes, the largest, at a low estimate, equaling the size of a small walnut. They weighed, as ascertained after evacuation, over seven ounces. No medicine was administered, but simply by peristaltic efforts were they ejected from the bowels. Some difficulty was experienced during their passage through the anus, the child being compelled to assist himself by using his fingers. No ill effects happened at the time; but I may add that the occurrence has left behind a relaxed condition of the sphincter ani, thereby prohibiting at times the poor child from retaining his fæces."

19. Mandl's extensive original essay being completed, we present our readers with a *résumé* of his experiments.

(*a.*) Animals breathing in water cannot live when a more or less considerable quantity of saccharine matter is dissolved therein. The substances experimented with include the true sugars, as cane sugar, beet sugar, glucose, sugar of milk, and the non-fermentescible sweet principles, as glycerine, mannite. The rapidity with which these solutions act depends on the relative quantity of the sugar in solution, the quality of the sugar, and the species and condition of the animal.

(*b.*) Experiments were made with a great number of different species of aquatic animals. They all lived much longer in solutions of cane sugar than in those of glycerine of the same strength. Thus fishes of the size of 12 to 15 centimeters [from 5 to 6 inches long] perished in a solution with the tenth part of glycerine at the end of 40 minutes, and in a solution of sugar, only at the end of four to five hours, all other circumstances being equal.

(*c.*) Very numerous experiments have demonstrated that death can be attributed neither to poisoning, nor to chemical action on the blood, nor to fermentation, nor to the absence of air, nor to the viscosity, but that it is solely and entirely due to osmose, (endosmose and exosmose,) exercised by the saccharine solutions.

(*d.*) This action goes on through all permeable membranes and especially through those of the organs of respiration. The non-fermentable saccharine principles possess an osmotic power greater than that of the true sugars; and

this explains the greater rapidity of their action. In infusorii this action goes on as in a bladder; osmose at once acts through the whole extent of their very thin integument and body; they are observed first to diminish, (exosmose,) then to swell up, (endosmose,) until they sometimes even burst; but the osmotic action going on over this whole extent is in all cases the cause of their rapid death. In animals of higher development, where the thickness of the teguments limits osmose principally to the gills, the blood is seen to thicken in the gills and circulation, to be arrested by exosmose of the liquid parts. The circulation in the lung of a frog can also be arrested over a limited space instantly with a drop of glycerine, and in a few minutes with simple syrup.

(e.) Endosmometric experiments were made with animal membranes (pericardium,) vegetable (collodion,) and mineral (unglazed porcelain.) to determine the solid constituents of the blood that pass into the saccharine liquid. It has been proved that the salts of the serum pass first, then albumen, then coloring matter.

(f.) Development is equally arrested by saccharine solutions, as was proved by the experiments made with muscular tissue macerated in saccharine solutions, and those on fecundated eggs of fishes.

(g.) Many physiological and pathological phenomena [to which we in this *Summary* can, however, but cursorily refer,] are referable to osmose exercised by saccharine solutions. Thus, the thirst excited by ingestion of sugar, which absorbs the water of the tissues with which it comes in contact; the antiseptic and preserving virtues of sugar, by the arrest of development of organisms; the digestive power of small quantities of sugar, which provoke the exosmose of gastric juice, while large quantities introduced into the blood increase its osmotic power. which explains the use of sugar in the treatment of dropsies. The abundance of glucose in all the tissues of diabetic patients explains the constant thirst, the impossibility of any serous accumulation, and perhaps, also, by arrest of circulation, the gangrene sometimes observed in such patients. The use of glycerine as a local application is also founded on its great osmotic power. Accidental local tuberculosis, the diagnosis and treatment of which differ essentially from that of "diathesical" tuberculosis, is perhaps the result of sugar being carried into the lung, [but to this subject we will devote a new paragraph, and literally translate the author's language:]

(h.) My studies on the etiology of tubercles [Mandl having previously demonstrated the fact that tubercle is not a specific product, but is produced from coagulation of secerned liquid substances of the blood,] have long led me to think that as to their origin, there are two distinct kinds of tubercles: the one depending on accident, the other on diathesis; the former constituting only a local affection, the other the symptom of a constitutional disease. Experiments actually undertaken tended to produce local accidental tubercles, by the injection into the vesicles of the lung of osmogenetic substances, and particularly of saccharine matter.

While the limited number of my experiments imposes upon me great reserve, as yet, the results obtained give me the hope of being able to prove, thus experimentally, the production of tubercles, only localized in the lung, by accidental exudation (exosmose) of plastic matters, independent of all diathesis. These experiments will be published in due time. I will here only add that they have led me back to the point of departure of the researches on osmose,

and to the accidental production of tubercles in diabetes, where all the tissues are impregnated with glucose. These labors open a new field to therapeutics. They explain the cure, spontaneous or by art, frequently occurring in tuberculous affections of the lungs, not depending on diathesis, but purely local.

20. I.—"The heart's throb cannot be caused by its systolic action. II.—The heart's throb can be caused by its diastolic motion."

21. The conclusions drawn from this article are:

(*a.*) The membrana tympani, instead of simple movements of tension and general relaxations, undergoes partial tensions and relaxations, under the influence of the petro-malleal and pyramido-stapeal muscles.

(*b.*) These two muscles form the only active agencies of the movements of the membrana tympani and the chain of bones; they are antagonists to the portion of the membrane which they draw apart.

(*c.*) This membrane can vibrate under the influence of sounds which strike upon it, but it cannot transmit them to the deeper parts of the ear without submitting to tensions and relaxations from the action of these muscles.

(*d.*) Although the integrity of the membrane is not absolutely necessary to simple audition, its lesion always entails aberration of the perception of sounds.

(*e.*) In the perforations of its anterior portions the ear is less accessible to low notes, while the contrary holds good in similar lesions of the posterior portion.

(*f.*) The bones of the tympanum are not absolutely indispensable to the mechanism of audition, provided always that the stapes is in its place.

(*g.*) The removal of the stapes, by giving passage to the liquids contained in the vestibule and the labyrinth always entails deafness, with a rapidity which corresponds with that of the flowing off of the liquid.

(*h.*) In this case the ear, if it has retained audition at all, will be sensible enough of less noise, but will have lost all aptitude to receive the simultaneous impression of several sounds.

(*i.*) The conditions necessary to a good musical ear must reside in a perfect adaptation of the malleo-tympanal articulation on the one part, the membrana tympani and the motor muscles on the other.

(*j.*) Examinations made on many distinguished singers have demonstrated that the membrana in them receives sounds equally and directly over its whole surface.

(*k.*) The oblique and very much inclined direction of this membrane in relation to the axis of the auditory canal constitutes an abnormal arrangement, which, by enfeebling audition, renders the ear quite unappreciative of certain sounds.

III.—MATERIA MEDICA AND TOXICOLOGY.

22. *On Saccharate of Colchicum.* By Dr. J. Joyeux. (Gazette des Hôpitaux, 32, 1860.)
23. *On the Effects of Santonin.* By C. P. Falck. (Deutsche Klinik, July 14, 1860.)
24. *On Ozonized Oils and their Medicinal Administration.* By Dugald Campbell. (London Chemist and Druggist, Feb. 15, 1860.)
25. *On Leeching.* (Froriep's Notizen, II., No. 21, 1860.)

26. *Experiments with the Corne and Demeaux Disinfectant.* By Dr. L. Abel. (Preuss. Militär Zeitung, I., 3, 1860.)
27. *On Cotyledon Umbilicus.* By Dr. Rodriques. (Gazeta Medica de Lisbon, XII., 1860.)
28. *On the Employment of Apiol against Amenorrhœa and Dysmenorrhœa.* By Dr. Joret. (Bulletin Géaéral de Thérapeutique Méd. et Chirur., August 15, 1860.)
29. *Black Coffee against Whooping-Cough.* (Reported from L'Union Méd., 64, 1860, by Prof. Jul. Clarus, Schmidt's Jahrbücher, CVII., p. 293, September, 1860.)
30. *Use of Chloride of Iron in Purpura Hæmorrhagica.* By Pize, Devergie, &c. (Bulletin de l'Académie Impériale de Médecine; all recent French periodicals.)
31. *On the External Use of Cyanide of Potassium.* By M. Th. Roche (Journal de Médecine de Bordeaux, Feb., 1860.)
32. *Case of Poisoning by Cyanide of Potassium.* By Dr. Th. Husemann (Deutsche Klinik, 13, 1860.)
33. *Case of Poisoning by Camphor.* By Dr. Fenerly. (Journal de Chimie Médicale, June, 1860.)
34. *Case of Poisoning by Atropine.* By Dr. Roux. (Gazette des Hôpitaux 64, 1860; Journal de Chimie Méd., Sept., 1860.)

22. That colchicum is so frequently found inefficient in cases of articular rheumatism and gout, Dr. Joyeux regards as due mostly to the use of an improper preparation. He considers colchicum "as certain a specific in gout and acute articular rheumatism, as iodine in goitre, and iron in chlorosis." The best and most uniform preparations are the fresh juice rubbed up in the proportion of one to five with sugar, and dried in vacuo; or 2, an extract obtained from the fresh juice by evaporation in vacuo. The former preparation he prefers for internal use, giving, as an average dose, four grammes (ʒj.) daily, in ten divided doses, while he employs the extract to rub on the painful parts. Giving such divided doses prevents all irritation of bowels and diarrhœa, which so many mistake as inseparable from the effects of the remedy. Attacks of gout so treated yield, at the latest, in two or three days; acute articular rheumatism after fourteen to twenty days. In cases of subacute rheumatism the remedy is not so efficient, though it usually gives considerable relief.

23. From a rather lengthy article detailing experim nts made by the author and one of his students in 1858, on themselves, dogs, rabbits, &c., we extract only as one of the conclusions arrived at, that santonin and santonate of soda has a very remarkable narcotic effect, causing incoherence of ideas and chromatopsy. To produce the latter, a larger dose is required. It is sure to occur in an adult from six to seven grains.

24. The discovery of ozone is due to Schönbein, who, about fifteen years ago first drew attention to some of the peculiar properties of this substance, which has been an object of increasing interest both to the chemist and physiologist since that time. Its natural presence in small quantities in the atmosphere has been proved to be highly beneficial to the human system, and indeed it is now generally regarded as an active form of oxygen, an element intimately connected with the economy of life. It was not, therefore, without reasonable hope

that it was supposed it might have some remedial effects if medicinally administered in a definite and graduated manner. The idea was strengthened by its having been observed to have remarkable effects upon organic structures, and especially upon dead blood. Mr. Dugald Campbell, the analytical chemist to the Consumption Hospital, who was the first to notice these effects of ozone, suggested that its administration might possibly be effected through the medium of oils. He believed that in case of phthisis, or consumption, and other morbid conditions in which it is of the utmost consequence to lower the pulse, without at the same time reducing the power of the patient, the use of ozonized oils might prove beneficial, and he consequently prepared a quantity of cod-liver oil, which the late physician to the Hospital for Consumption, Dr. Theophilus Thompson, undertook to experiment with. This he did, as did also his friend Dr. Scott Alison, and the results are now before us. It appears that the reduction of the pulse was usually observable in two or three days, and was often progressively maintained for a considerable period. A reduction of twenty beats in some cases was observed to occur respectively in two, three, four, and six days; in other instances a reduction of twenty-four pulsations was noted in fourteen days, thirty-four in thirteen, thirty-six in twenty-two, and forty in eleven days. In Dr. Alison's experiments a reduction of twenty beats occurred, which he describes as not referable to any other cause than that of the administration of ozonized oil, and observes that he attaches some importance to this statement, as he prescribed the oil totally divested of all prejudice in its favor. He concludes that in reducing the rapidity of the circulation ozonized oil possesses a most valuable property, rendered still more so by its contributing at the same time to improve the general health. The general conclusions of Dr. Thompson on the use of ozonized oils are not less satisfactory. He states that it is difficult to review the history of his experiments without being impressed with the conviction that the administration of ozonized oil has a remarkable tendency to reduce the frequency of the pulse, and that although additions to our list of medicines are not generally to be desired, yet that this preparation has more than a common claim to consideration; a general improvement of the patient's condition being apparently in all cases associated with its use.

25. The simplest and most efficient way to make a leech bite is, after having well cleansed and rubbed over with sweet cream the spot to be leeched, to moisten the back of the leech with wine immediately before applying.

26. We can dispose of this exceedingly elaborate and well-written article by saying, that after the most thorough practical trials of the mixture of plaster of Paris and coal-tar, lately so highly recommended in Europe, the author is forced to pronounce the verdict of "inconvenient," "disagreeable," and "inefficient."

27. Five remarkable cases of cure of epilepsy are briefly and without much scientific precision related. From these the conclusion may, however, be drawn that the fresh juice of the cotyledon umbilicus (or navel-wort, a plant growing in Europe on old walls and rocks,) may be given in teaspoonful doses two or three times a day, without fear of danger; and that its continued administration for several months may be useful in certain epileptiform and hysterical affections.

28. Apiol, i. e., Parsley Oil, is best administered in gelatinous capsules, each containing 25 centigrammes, (about 4 grains.) One capsule is given every

morning and evening during the whole menstrual period, (for 4 or 5 days,) which treatment, if necessary, is repeated at the two or three next menstrual periods. As the conclusion of his article, Dr. Joret lays down the following propositions:

(1.) The treatment of amenorrhœa and dysmenorrhœa must be varied according to the causes which give rise to the disease.

(2.) Whatever medication be adopted, it should be employed only at the precise time for the return of the menses, which is indicated by the spontaneous congestion of the uterus, and is generally easily recognized from its accompanying phenomena.

(3.) When amenorrhœa or dysmenorrhœa depend upon a diminution, excess or perversion of the vitality of the uterus, with local or general neurosis, apiol, administered according to the rules we have laid down, is the best and most certain emmenagogue. It is the excitor and regulator of menstruation. It can always be used without danger, (not interfering with pregnancy.)

29. In an article filled with a mass of unnecessary and irrelevant observations, G. states that he thinks very little of medicines in whooping-cough, but that he has seen cures in a few days follow the use of flesh diet and strong black coffee.

30. The discussion on this subject in the French Academy of Medicine, which soon merged into an unrefreshing one between so-called vitalists, organicists and chemists, was not concluded until August 4th. There can be no doubt of the value of the remedy.

31. The author's conclusion is. that the solution of two to three decigrammes of cyanide of potassium, in thirty grammes of water, (gr. ij.—iij. ad. ℥v.) locally applied, cures neuralgia, if it is *superficial and localized.*

He also concludes that the remedy does not act by refrigeration, nor by rubefaction, vesication, or pulmonary absorption of the cyanic vapors, but by cutaneous absorption of the salts in the state of cyanide, or free hydrocyanic acid.

32. A young man, æt. 21 years, in perfect health. drank by mistake a large mouthful of a solution of Cyanuret of Potassium prepared for photographic purposes. He fell down. insensible, almost instantaneously, and only regained consciousness a few minutes later, after spontaneous vomiting. Twenty minutes afterwards the author found him sitting in a chair, conscious, and able, though somewhat unconnectedly, to answer the questions put to him. He complained of continued giddiness, confusion in functions of sensorium, buzzing in the ears, sense of great coldness, impossibility to rise up without falling, difficult and rattling respirations. The mouth was found open; face cyanotic; eyes staring, very shining and injected; pupil dilated; temperature of the skin, especially of the extremities, very low; tongue cold; impulse of heart. as well as pulse at the wrist, almost imperceptible and intermittent; incomplete anæsthesia to external touch; no convulsions. Smell of prussic acid was not perceived proceeding from the mouth or breath. nor had it been noticed before by the persons around him. An emetic removed only a small quantity of liquid containing hydrocyanic acid. Spirits of ammonia and chlorine water, administered internally and by inhalation, were used, with the effect of inducing a gentle perspiration. after about three hours. and complete removal of anæsthesia and sensation of coldness. Two days later all effects of the poison had passed off.

33. A woman, æt. 36 years, mother of 5 children, in the 4th month of preg-

nancy, took 12 grains of camphor to produce abortion. For two hours she was intoxicated; she had headache, redness of face, burning sensation in the stomach; after 8 hours, increasing pain in epigastrium, extending to the loins, diffused also through the whole abdomen; strangury, excessive anxiety, vomiting. Three days later Dr. F. found her in the following condition: Face pale, bluish; eyes hollow; skin cold. and unsensitive; pulse small, and thready; heart's impulse weak. and slow; respiration difficult; voice weak; abdomen intensely painful to the touch; violent cramps of the extremities; micturition suppressed for 24 hours; bladder therefore excessively full; coma; slight discharge of blood from the vagina; os uteri widened. very hot. The patient lived three days longer, and aborted on the evening before her death. No account is given of an autopsy.

34. A woman, æt. 30 years, in the 5th month of pregnancy, took a solution of about 9 centigrammes [$1\frac{2}{3}$ grs.] of atropine in water, alcohol, and acetic acid. Roux found only a line of iris; sight not entirely gone, but objects were seen reddish colored, and as through a thick veil; nausea, and after administration of warm water. abundant vomiting, confusion, inclination to sleep, coldness, formication, and cramps of the extremities. Pulse weak, small, 150. Ordered strong coffee, cold to the temples, sinapisms to extremities, and small injections of coffee. At noon, a few hours later, considerable restlessness and delirium, complete unconsciousness, beginning trismus, swallowing quite easy, however; tenesmus frequent; inclination to urinate; urine clear and transparent. Ordered iodide of potassium, 1 gramme, [nearly $15\frac{1}{2}$ grs.] with iodine, 10 centigrammes [about $1\frac{1}{2}$ grs.] in 400 grammes water, [nearly 13 oz.,] a cupful to be taken every half hour, alternating with coffee internally, and by injection, and cold affusion to the face. The delirium and restlessness soon decreased; no thirst; tongue red and dry; pulse 110. At six o'clock in the evening, rest and inclination to sleep, without sleep; ideas still unconnected. On the following day, pupil still greatly dilated; vision reddish, tinted and indistinct; great weakness and pallor; slight diarrhœa; consciousness entirely returned. Examination of the morning's urine showed presence of atropine. Patient gradually entirely recovered.

IV.—PATHOLOGY, THERAPEUTICS AND CLINICAL MEDICINE.

35. *Case of Spontaneous or Primary Softening of the Heart.* By Dr. E. Wagner. (Archiv. der Heilkunde, I., 2. 1860, p. 185.)
36. *On the Difficulties that attend the Diagnosis of the Nervous Affections known as Intermittent Tetanus, Tetanille, Idiopathic Muscular Spasms, &c.* By M. Trousseau. (Medical Circular, Aug. 1 and 8, 1860.)
37. *On Typhlitis and Perityphlitis.* By Dr. Munchmeyer. (Deutsche Klinik, 5–10, 1860.
38. *On Hepatic Colic.* By M. Trousseau. (Gazette des Hôpitaux. 37, 1860.)
39. *Acute Atrophy of the Liver.* By Prof. Oppolzer. (Spital's Zeitung, 6–9, 1860.)
40. *Two Cases of Degeneration of the Kidney from Prof. Traube's Clinique.* By Dr. Ph. Munk. (Deutsche Klinik, 10, 1860.)
41. *On the Diagnosis of Cancer of the Kidney.* By Dr. Max Doderlein. (Zur Diagnose der Krebsgeschwülste in rechten Hypochondrium insbesondere der Niere und Nebeniere. 8vo. Erlangen, 1860.)

42. *The Geographical Occurrence of Diabetes.* By Dr. A. Hirsch. (Handbuch für Histor. Geogr. Pathologie; Froriep's Notizen. II., No. 22, 1860.)
43. *On the Treatment of Drunkenness.* By Dr. Le Cœur. (Revue de Thérapeutique Médico-Chirurgicale. No. 15, August, 1860.)
44. *The Treatment of Delirium Tremens by Large Doses of Digitalis.* By G. M. Jones. (Medical Times and Gazette, Sept. 29, 1860.) *Heroic Doses of Digitalis in Nervous Excitement.* By A. Wynn Williams, M.D. (Med. Times and Gazette, Oct. 6, 1860.)
45. *Analysis of Six Cases of Diphtheria.* By Thos. Gibson, M.D. (Medical Circular. August 1, 1860.)
46. *The Nature and Treatment of Gout.* By Alfred Baring Garrod, M.D. (Review of his Work in Edinburgh Medical Journal, July, 1860.)

35. This, the author relates as a unique case in his observation, and, indeed, in the literature of the subject. The substance of the heart of a male infant, æt. sixteen days, was found entirely softened, without fatty degeneration, decomposition, or other assignable cause. The mother had died of puerperal fever.

36. A case of idiopathic muscular spasms presenting at the Hôtel Dieu, Trousseau took occasion to make a few apropos remarks on this singular affection. As an important diagnostic means, he mentions the circumstance, by chance discovered by himself, that contraction of any member may be produced at pleasure by compressing the origin of the nerves that go to it. Among the predisposing causes, he mentions obstinate diarrhœa and nursing; among the exciting, atmospheric impressions, as by cold and wet. The prognosis is generally favorable. The disease may last from ten days to two or three months. As to its nature, it should be ranked with epilepsy, hysteria, eclampsia and catalepsy. There are no serious lesions of the brain or spinal marrow. Trousseau's opinion is, that this neurosis is rheumatic. Bleeding from the arm and cupping along the spine, and quinine internally, are the main therapeutic agents. "Inhaling chloroform during the attack is occasionally of some benefit; and thanks to this anæsthetic agent, though the rigidity disappears only to return a little after, some amelioration is always the result. Opium and belladonna, in moderate doses, are medicines the good effects of which I must also mention, though they do not in the least diminish the value of venesection and sulphate of quinine, which maintain their right to the best place."

37. Dr. Münchmeyer discusses in several able articles, forming a particularly valuable monograph—dilatation of the cœcum, inflammation of the cœcum and its appendages, cœcal ulceration, inflammation of the neighboring cellular tissue, and its consequences, in rather extensive details as to cause, character, and treatment.

Accumulation of fæculent matter may easily induce abnormal *dilatation* of the cœcum. Cause: inactive mode of life, and use of food difficult of digestion. Its occurrence is favored by pressure upon the transverse colon from stays or belts, and other circumstances interfering with the passage of the fæces. Distinguished from inflammation, &c., by absence of heat and violent pain in the region of the cœcum, increased on pressure and motion, and frequently by presence of pain in the right leg. Though evacuation may, in the beginning, not be

entirely wanting, the fæces are scanty and hard, alternating with diarrhœic discharges.

Typhlitis occurs hardly ever without previous dilatation. The cause of inflammation supervening, not seldom, is cold, especially from cold drinks; or in other cases, puerperal disorder. In both of these cases, it is acute; in others, coming on more gradually. The symptoms are far more violent than those of dilatation, though similar locally. There is continued severe pain, very much increased on pressure or motion of the body. Great heat, and a circumscribed, somewhat movable tumor can be perceived on external examination. Violent fever and gastric disturbance also soon appear. Unless the inflammation is subdued, it extends to other portions of intestine and to the peritoneum, or, by closure of the ileo-cœcal valve, causes ileus. In the most favorable case, the local phenomena disappear with abundant perspiration and defecation. The irritation of obstructed, hardened fæces, continuing, *ulceration* may be added to inflammation. At first, without characteristic symptom, the passage of a little muco-bloody, purulent matter, generally soon points it out. The sound observed on percussing the tumor is also generally peculiar and indicative. Cases terminating favorably are known by the fever abating, critical sweats, and excretion of urine returning at certain hours daily, the gastric difficulties disappearing, and yellowish mucoid, and afterwards pappy discharges from the bowels, besides improvement of the local phenomena. Perforation is attended with the well-known phenomena, as of other portions of the bowels.

Perityphlitis is either a consequence of dilatation and typhlitis, or occurs after general diseases, with a tendency to localization of inflammatory processes, as rheumatic, catarrhal, erysipelatous and puerperal fever. In the latter cases, too, previous obstinate constipation forms a predisposing cause. The pain and tumefaction are diffused over a larger space than in typhlitis, frequently extending over the whole right half of the abdomen. The pain is more superficial, and either of a colicky or rheumatic nature. Gradually the pain becomes more limited in extent, but increased in severity, now soon rendering voluntary motion of the leg or toleration of pressure in the right iliac region impossible. A hard, immovable tumor may also then be perceived, &c. Secondary perityphlitis is caused by extension of inflammation from the cœcum, and is known by the uniform diffusion of the tumefaction in all directions. Termination by resolution is possible in even the most acute cases, but suppuration occurs frequently.

In the *treatment* of all these affections, evacuation of the bowel is required, but the manner of accomplishing this and accompanying treatment must be different according to the circumstances of each case. Where there is great dilatation with irremovable obstruction, the only means is the establishment of an artificial anus. In cases of typhlitis and perityphlitis, castor oil and calomel may judiciously be employed in addition to enemata; which latter are continued while the painful tumefaction lasts. As soon as perforation is revealed purgatives must, of course, be discontinued. Abstractions of blood, general and more especially local, may prove of decided benefit, particularly in the beginning, and may be resorted to even when ulcerative action has set in, provided plainly inflammatory symptoms continue. Its effect is aided by warm, or, in violent cases, cold local applications. In cases of ulcers the very strictest rest and diet must be recommended, with calomel in $\frac{1}{4}$–$\frac{1}{2}$ grain doses two or three times daily, and emulsions; as well as blistering in the region of the

cœcum kept up for some time. During convalescence astringents may be used. If perforation takes place, the main medication is to prevent peristaltic motion, and a half to even one grain of opium may be given every half hour at first, afterwards less frequently, but still keeping up its action till pressure produces no longer pain. Mere ulceration does not indicate opium, but sudden occurrence of circumscribed peritonitis does. In cases of opening of perityphlitic abscess into the bowel, it is irrational to give opium, as the evacuation of pus is to be favored. Continued poulticing is of the most advantage in such cases. Abscesses of moderate extent may frequently be resolved by blistering; otherwise early evacuation is recommended. In absence of fluctuation, the spot is to be chosen for opening that is most painful to the touch.

Now, though the author has not advanced anything that was not previously known, a perusal of his article cannot but give clear and true notions on a subject frequently badly, or not at all, understood.

38. Characteristic of hepatic colic are: (1.) Sudden appearance of the pain in the region of the liver or stomach, its lasting several hours, and returning at uncertain times, and its dependence on eating. (2.) The nausea and vomiting of matter not biliary. (3.) The appearance of jaundice soon after, and the discharge of biliary calculi by the bowels. If the calculus is in the choledoch duct the attack lasts a shorter time, and vomiting occurs more rarely than when seated in the gall-bladder and the cystic duct.

As to treatment, there is no remedy that can dissolve the calculus, but it commonly easily passes under the use of Karlsbad, Vichy, and other waters. The main indication in the cure is abundant bodily exercise, united with a diet of fresh vegetables, and avoiding fat. Besides regulating these matters, the author prescribes Ol. Terebinth, in *Le Huby's* capsules, (2 parts of turpentine with 1 of ether,) from 4 to 12 during each meal, to be continued for months.

During the attack, chloroform, belladonna, and prolonged baths, are recommended as most useful.

39. An *almost* pathognomonic sign is the presence of leucin and tyrosin in the urine, with great decrease of urea. Carbonate of ammonia was also constantly met with in the cases in which the urine was examined. The author regards acute atrophy essentially an inflammatory process, but does not deny its occurrence from other disorders of nutrition; thus he found it once after emboly of the hepatic artery. The etiology is unknown; middle age, female sex, mental excitement, pregnancy and parturition seem to be relatively predisposing circumstances. The prognosis, whenever a large portion of the liver is affected, is highly unfavorable; with more limited disease, a stoppage of morbid action is possible.

The *treatment* may in the beginning, *i. e.*, before the diminution in size is plainly demonstrable, consist of local abstraction of blood and mild laxatives; afterwards it can only be directed against urgent symptoms; excitation may be treated with cold to the head and opium; depression with excitants, &c.

40. One was a case of amyloid degeneration after tuberculosis; the other of enlargement of the cortical and shrinking of the pyramidal portion, with atrophy of the heart. To transcribe the report of these cases in all their interesting detail would carry us beyond the limits of this *Summary;* but we would direct the attention of our readers to the important point in relation to diagno-

sis that the urine, which is ordinarily yellowish in fever, becomes still more scanty, darker, and specifically heavier in fever when amyloid degeneration of the kidney is present; while it always remains pale in fever when the shrinking referred to exists. *Traube* has also constantly found amyloid degeneration of the kidney in cases of tubercular disease in which dropsy and albumen in the urine had occurred.

41. Cancer of the kidney is known from the position of the tumor, the functional phenomena of the kidney, secondary affections of other organs, constitutional symptoms, and the duration and origin of the disease. The two most important phenomena in a diagnostic point of view being the peculiar swelling and hæmaturia, the following are the main symptomatic forms of the disease:

(1.) Cancer of the kidney, without tumor and without hæmaturia. *Very rare.*

(2.) Cancer of the kidney with hæmaturia, without tumor. Even where no tumor can be made out, the disease can be diagnosed from the existence of hæmaturia, when its source is not in the bladder or urethra, when it is persistent or of frequent return, (*abundant* hæmaturia is neither necessary nor common,) when no gravel or stones are passed, when there are no signs of renal colic nor of suppuration in the kidney, especially no violent fever and pus in the urine, when cachexia pre-existed or soon makes its appearance, when cancer can be proved to exist in other organs.

(3.) Cancer of the kidney with tumor, without hæmaturia. In such a case the diagnosis may be made out from the peculiarities of the tumor: absence of œdema of the skin over it, from the phenomena of cachexia; absence, or at least, moderate and temporary appearance of fever, from the rapid enormous emaciation, with fatal issue in a year's time. The consequences of the closure of the inferior vena cava: the established presence of cancer in other organs, previous cancer of the testes, absence of uremia.

(4.) Cancer of the kidney with tumor and hæmaturia. In such a case, the diagnosis is most probable and least difficult.

42. According to Hirsch, diabetes occurs most frequently where the inhabitants live principally or exclusively on vegetable food.

43. Le Cœur restricts the value of acetate of ammonia to the drunkenness induced by liquors containing a certain quantity of acid, as Bordeaux wine, champagne, &c., and speaks extremely favorable of common refined lump sugar, in indefinite moderate quantities, as a powerful remedy in especiallly the beginning phenomena of intoxication by alcohol and its derivatives. [Space forbids us following the author's speculations on the *modus operandi* of this certainly harmless, and, according to him, very efficient remedy; nor can we even refer to the cases, interesting from many other points of view, besides illustrating his treatment, which he ably details. We cannot, however, leave the subject without yet calling the attention of our readers to the decoction of asarabacca, *Asarum Europæum*, recommended some time ago by Smirnoff, of the use of which in the disordered condition of the prima via and nervous system of drunkards, we have recently had several proofs.]

44. During the last twelve years the author has treated with digitalis at least 70 cases of delirium tremens. In at least 67, no other medicine was used; 66 recovered; and in the case lost—the only one in the 12 years—there was "a tumor in the brain." The dose recommended is *half an ounce* of the tincture

given in a little water. "In some few cases, this one dose is enough, but generally a second dose is required four hours after the first. In some cases, but very seldom, a third dose is called for; but this hardly ever need exceed two drachms. The largest quantity I have ever given was *half an ounce* at first, *half an ounce* four hours afterwards, and another *half an ounce* six hours after that—making an ounce and a half in ten hours. As to the effects of these doses, my impression is that the action is on the brain, not on the heart. The pulse, so far from being lowered in force, becomes fuller and stronger, and more regular, soon after the first dose. The cold, clammy perspiration passes off, and the skin becomes warmer. As soon as the remedy produces its full effect, sleep for five, six or seven hours commonly follows; sleep is the guide as to the repetition of the dose. No action on the kidneys is evidenced by any unusual secretion of urine. Sometimes the bowels are slightly acted on, but not commonly. I have never once seen any alarming symptom follow the use of these large doses of digitalis."

Dr. Williams has averted impending paroxysms of epilepsy by a half-ounce dose of tinct. of digitalis, and recommends it for trial, also, in puerperal convulsions.

45. (1.) M. A., female, aged six years; duration of disease, three weeks; recovery.

(2.) W. B , male, thirty-seven years of age; ill nine days; recovery.

(3.) S. A., aged eleven years; observed six hours; died.

(4.) A. S., male, aged eighteen months; ill one month; the exudation on the fauces, &c., recurring during the last week of the illness, and resulting in death, with symptoms of cramp.

(5.) Aged thirteen years, female; observed twenty-four hours; death resulted as in the former case, with similar symptoms.

(6.) Aged seven years, male; observed for three weeks; recovery.

All the above cases put on the same symptoms, corresponding exactly in the nature of the exudation and the affection of the respiratory apparatus, with a decided tendency to coma in the fatal cases.

No. 1. The patient expectorated large quantities of tubulated false membrane, and with great relief, the paroxysms uniformly abating in intensity, and the cerebral symptoms mitigating. The treatment pursued was a mixture of the stimulating with the antiphlogistic, with a liberal supply of port-wine, with beef-tea, alternating when the exudation was more than usual in quantity, and when the breathing was oppressed, with an emetic of the tartarized antimony, inhalation of steam. purgative doses of calomel, &c., penciling twice daily the fauces with tr. ferri mur., ʒij., aq. puræ ad ℥ss., and the administration of a mixture composed of nitro-muriatic acid in bitter infusion. In Nos. 2, 4, and 6, the same treatment was adopted with beneficial effects, except in No. 4, which, owing to the relapse, and the great difficulty of effectually sponging the throat of young children, unfortunately terminated fatally.

As a rule in this country, I find. on inquiries rigidly made, that when the patients have been seen by the medical attendant early, and treated on this principle, they have uniformly done well; but very often the patients themselves have not observed any serious illness until the disease had so far advanced as to be beyond the reach of medical aid; for when the fauces have been in an

aphthous condition for a length of time, the system gives way, and every attempt is rendered futile by the croupy respiration and the speedy death of the patient, which not unfrequently is preceded by convulsions, owing to the non-arterialization of the blood in the lungs. In cases Nos. 3 and 5 the unfortunate patients were in that condition. I hold that diphtheria requires support at the very commencement; and in this the treatment differs from scarlatina, which will not bear this kind of treatment until the fever is subdued.

46. According to Dr. Garrod, gout depends on, or at least is to a great extent associated with, an impairment of the uric-acid secreting function of the kidneys. There is less uric acid found in the urine; and an excess in the blood, the quantity in the latter appearing to vary from 0.025 to 0.175 grains in 1,000 grains of the serum, not making allowance for the loss which Dr. G. finds always takes place by decomposition and other causes.

The "*uric-acid thread experiment*," which brings the analysis within easy reach of the ordinary practitioner, is important. "Take from one to two fluid drachms of the serum of blood, and put it into a flattened glass dish or capsule; those I prefer are about three inches in diameter, and one-third of an inch in depth, which can be readily procured at any glass-house; to this add ordinary strong acetic acid, in the proportion of six minims to each fluid drachm of serum, which usually causes the evolution of a few bubbles of gas. When the fluids are well mixed, introduce a very fine thread, consisting of from one to three ultimate fibres, about an inch in length, from a piece of unwashed huckaback, or other linen fabric, which should be depressed by means of a small rod, as a probe or point of a pencil. The glass should then be put aside in a moderately warm place, until the serum is quite set, and almost dry; the mantel piece in a room of the ordinary temperature, or a book-case answers very well, the time varying from twenty-four to forty-eight hours, depending on the warmth and dryness of the atmosphere." Whenever uric acid crystallizes on the thread it is, according to the author, present in not less than 0.025 grains in 1,000 grains of serum; that is, in decidedly abnormal quantity. The absence of delicacy, above a certain degree, in the test thus becomes one of its most valuable attributes. Uric acid may also be obtained from the serum of blisters, and the cutaneous secretions of the gouty by means of the uric-acid thread experiment.

In rheumatism, the results by the thread experiment were uniformly negative. Rheumatism and gout are totally distinct diseases, not often associated, nor to be confounded with each other; the name "rheumatic gout" being in reality only a name for ignorance or imperfect information. In doubtful cases, the uric acid test may be substituted to a great degree for the imperfect means of diagnosis at present existing, introducing clearness where there is at present confusion.

As to treatment, Dr. G. recommends in the acute attack "a strict antiphlogistic diet," with abundant diluents; purgatives in great moderation, saline diuretics and diaphoretics, with moderate doses of colchicum in sthenic cases, and perhaps the abstraction of *a few ounces only* of blood, after the method of Dr. Gairdner.

The chief novelty in Dr. G's treatment of chronic gout is the use of the carbonate and bicarbonate of lithia, which has "a remarkable power of imparting solubility to uric acid." It has also a much greater neutralizing power with

respect to free acids in general than potash or soda—a power dependent upon the low atomic equivalent of lithia, not exceeding seven on the hydrogen scale. He recommends it to be used in the form of a supercarbonate or aerated lithia water.

EDITORIAL AND MISCELLANEOUS.

Editorial Correspondence.

Nitrate of Potash in Certain Diseases. By A. Lane, M.D., R. N., Mahone Bay, Nova Scotia. Sir—Having discovered some years ago that the nitrate of potash possessed a peculiar power in the cure of certain diseases, I communicated the same to the Medical Inspector General of her Majesty's Hospitals and Fleets, and also to a Medical Society in Switzerland. I now wish to put you in possession of it, and request you to give it a fair trial, and also to communicate it to all your brother physicians, so that if it is of any value it may be universally known. In all cases of small-pox, scarlatina, erysipelas, *et hoc genus omne*, acute rheumatism, arthritis, and all febrile affections, I have used it successfully. I first, if necessary, open the bowels with the croton oil mixture; I then give ten grains of the pure nitrate of potash every two hours in some cold water. I give cold water for drink, each quart containing two drachms of the potash; drink *ad libitum.* I keep the patient perfectly quiet with the muriate of morphine. The potash is rapidly absorbed, and as soon as the system is saturated with it, the disease gives way to its influence; its action must be kept up until all the most prominent symptoms vanish; of course the physician must be guided, in other respects, by the peculiar habit and idiosyncrasies of his patient. In conclusion, I can only say my practice has been most successful.

A New Operation for Amputation of the Foot. By George Mann, M. D., Newfane, N. Y. I noticed in your September No. an article from Dr. A. P. Smith, taken from the *Maryland and Virginia Medical Journal*, recommending a new operation on the foot, viz., that of cutting through the metatarsal bones instead of disarticulating, as usually recommended.

It particularly attracted my attention, having assisted Dr. A. M. Helmer, of Lockport, N. Y., perform this operation in July last, with perfect success. Up to that period, we had never seen or heard of the operation. Dr. Helmer had occasion to make an amputation above the digital extremities of the metatarsal bones; it was determined to save as much of the arch of the foot as possible, consequently he sawed through the bones about one-quarter their length above the

digital extremities, cutting the first and fifth a little shorter than the rest, thereby leaving a slightly convex surface. This plan enabled him to cover the stump with a generous flap, which healed kindly, and the patient, a man aged about forty years, an inmate of the Niagara County poor-house, is now able to walk nearly or quite as well as in many instances where the entire bone is left.

Why has so simple, and, in my estimation, so judicious an operation, not been recommended before?

Ligatures Retained after Operations. By Geo. W. Manter, Auburn, N. H. In the February No. of the Monthly it is stated in the *Summary* that Dr. Elsworth had repeatedly ligated arteries with the common silk ligature, had cut them close, closed the wound which had healed by first intention, and that he had never seen any disturbance result from the retained ligature. The question is asked if any of the readers of the Monthly have had similar experience. I for one have had some experience upon this point, and it accords with that of Dr. Elsworth.

In 1854, while amputating a limb below the knee, I found an artery about the size of a small quill, in the tibia, a fourth of an inch from the surface, and at the upper portion of the lower third of the bone. I ligated it with common silk, and cut close.

In operations such as amputations of the metatarsal bone, I have ligated arteries in the same manner. In bad cuts, also, where arteries are divided, and I desire to have the wound heal by first intention, I tie the arteries with the common silk ligature, cut close to the knot, and close the wound. The silver ligature may be better in some respects, but its shape is somewhat irregular, and it may not adapt itself to the soft parts as well as silk.

Account of the Poisoning of Thenard by Corrosive Sublimate.—M. Flourens read an interesting Éloge on Thenard, before the Academy of Sciences, January 30, 1860. We find in it the following account of the sangfroid of Thenard, when he had accidentally taken a large quantity of corrosive sublimate, and of the excitement incident to the occasion:

" During a lecture at the Polytechnic School, it happened, one day, that something necessary for the demonstration was wanting. Thenard called for it impatiently, and while the assistant ran with all his might to procure it, the professor, by way of passing the time, put his hand on a tumbler and raised it to his lips without examination. Having taken two swallows, he placed it on the table. Gentlemen, he said with sangfroid, I have poisoned myself. An electric shock was imme-

diately felt, and the faces of all became pale. Thenard stated that it was corrosive sublimate which he had swallowed, adding white of egg will combat its effects: "will some one get me some eggs?" Scarcely had this sentence escaped him, when the doors and windows were not wide enough—they ran, they pitched headlong—the storehouses are forced open, the kitchens likewise—but no eggs; the neighborhood, being put under contribution, was soon pillaged; each brought his share, and a mountain of eggs was reared. In the mean time a student flew to the Faculty of Medicine. Interrupting an examination, he cried: "A doctor! Thenard has poisoned himself in the school while delivering his lecture." Dupuytren arose. "Do you understand?" he said, and ran out; a cabriolet is in the way—he mounts—whips the horses—arrives—leaps to the ground. However, thanks to the albumen, Thenard was already saved; but Dupuytren required the employment of the pump, so as to be sure that the stomach might not absorb any corrosive substance. The organ becomes inflamed; and, safe from the poison, Thenard is put in danger by the remedy."

"Thenard was carried home. There, all the doors were guarded; the students of all the schools united to surround the house with triple ramparts; advance sentinels were detached to keep off the troublesome; silent and mournful all awaited the news transmitted from within, where the most fitted were scarcely able to restrain their zeal; in the sincerity of their affection, they envied the privileges of the family. Day and night watch was kept without intermission, without fatigue, for this man, who swayed the whole realm of kindness, was the property of the youth, and they wished to save him. Every morning, accurate bulletins were affixed on all the large establishments; no one knew their authors. When Thenard reappeared in his chair at the Sorbonne, the excitement was so great that every one ran out without knowing precisely what he was doing; the professor himself declared that he had no power of controlling his deep emotion." L. H. S.

—The Medical Colleges of New York are once more in the full tide of successful operation. The *University Medical College* opened its annual session Monday, Oct. 15, with an introductory lecture by Prof. Valentine Mott. The subject of the lecture was the Present State of Medical Science and its Progress during the last decade of years.

The *New York Medical College* commenced its regular session Wednesday, Oct. 17, which was inaugurated by a lecture in the laboratory, by the Professor of Chemistry, Dr. R. Ogden Doremus. The subject of the lecture was Carbonic Acid Gas, which was illustrated with many brilliant experiments. At the close of the experimental lecture,

Dr. Doremus addressed the audience upon the relations existing between medical schools, the medical profession, and the public, giving a history of the rise of the new Hospital which is now attached to this school. The vacancies existing in the Faculty of the New York Medical College have all been filled by the appointment of Dr. R. K. Browne to the Chair of Physiology; of Dr. George Thurber as Lecturer on Materia Medica, Botany, and Pharmacy; Dr. Joseph Schnetter as Lecturer on Pathological Anatomy; Dr. W. R. Whitehead as Lecturer on Clinical Medicine; and Dr. M. Bradley as Adjunct Professor of Anatomy.

The *College of Physicians and Surgeons* opened its session on Monday, Oct. 22, by a lecture on the History of the Circulation of the Blood, by Prof. JOHN C. DALTON, JR. With the commencement of this session, the College of Physicians and Surgeons becomes the Medical Department of Columbia College, and President King took the opportunity of the opening of the session, to inaugurate this completion of the University by the union of the Medical Department to those of Law and Literature, already in operation.

— Dr. John H. Tate, of Cleveland, O., has been appointed to the Chair of Obstetrics in the Cincinnati College of Medicine and Surgery.—Dr. G. M. B. Maughs, of Kansas City, has been appointed to the Chair of Chemistry and Physiology in the Missouri Medical College.—Drs. Logan and W. F. Westmoreland have retired from the editorial management of the *Atlanta Medical and Surgical Journal*.—Prof. E. M. Moore, formerly of Starling Medical College, has been appointed to the Chair of Surgery in the Buffalo School.—Prof. L. M. Lawson, recently of the Medical College of Ohio, will occupy the Chair of Clinical Medicine in the University of La.—Dr. G. A. Peters has been elected as Surgeon to the New York Hospital, to supply the vacancy made by the recent resignation of Dr. Van Buren.—Dr. Foster Swift has been appointed Lecturer Adjunct to the Professor of Obstetrics in the College of Physicians and Surgeons, in the place of Dr. Geo. T. Elliott, resigned.—Dr. F. T. Miles succeeds Dr. Holbrook in the Chair of Anatomy in the Medical College of the State of South Carolina.—Dr. J. Troup Maxwell has accepted the Chair of Obstetrics in the Oglethorpe Medical College, Savannah, Ga.—The *Boston Journal of Physical Culture* is the title of a monthly publication devoted to Gymnastics, and edited by Dr. Lewis.—A new work by Prof. Hodge, of Philadelphia, on Diseases of Females, is soon to appear.—A work by Prof. Gross, entitled American Medical Biography, is in the press of Messrs. Lindsay & Blakiston.

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ESSAYS, MONOGRAPHS, AND CASES.

The Physiology of the Circulation. A Course of Lectures delivered in the College of Physicians and Surgeons, New York, in the Fall Term of 1859. By John C. Dalton, Jr., M.D., Professor of Physiology and Microscopic Anatomy.

LECTURE XII.

(October 15.)

The Lymph and the Lymphatics—Analogy with the Blood and Blood-vessels—Origin and Course of the Lymphatics—Structure of the Lymphatic Glands—Lymphatics not the Exclusive Agents of Absorption—Constitution of the Lymph—Its Variations—Lymph and Chyle—Mode of Obtaining these Fluids—In Ruminating Animals—In the Dog—Appearance and Properties of the Chyle—Coagulation—Contraction and Redness of the Clot—Mixture of Blood—Source of this Mixture—Appearance of Chyle at Different Periods—Experiments—Total Quantity of the Chyle and Lymph—Interchange of Animal Fluids—Conclusion.

The history of the circulation, gentlemen, would be very incomplete if we were to confine our attention altogether to the blood and blood-vessels. For beside the sanguiferous system proper, there exists in the body another exceedingly extensive and important system of ves-

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sels, containing a fluid rich in animal and saline ingredients, viz.: that of the *absorbents* or *lymphatics*.

These vessels may be regarded as secondary or supplementary to the blood-vessels, since they are connected with the sanguiferous system by various communications, and since the fluid which they contain resembles, in several of its ingredients, the plasma of the blood. The great peculiarity of the lymphatic system, however, is this: that while the blood in the sanguiferous vessels passes alternately, through two sets of capillaries, from the arteries to the veins and from the veins to the arteries, thus returning in a continuous circle, the lymph moves through the lymphatic vessels only from without inward. The lymphatics, as we know, originate by minute capillary plexuses in the substance of the organs and tissues; and, pursuing their course from without inward, terminate finally in the great veins near the top of the chest. There is no diverging system of lymphatic vessels, corresponding with those which converge toward the centre; and consequently there is no *circulation* of the lymph, strictly speaking, in the same sense as there is a circulation of the blood. The lymph, as we shall find, is supplied by exudation from the substance of the tissues and organs, and is constantly poured into the current of venous blood, as it returns toward the right side of the heart.

But, after all, there is no such great difference, in this respect, between the blood and the lymph as we might be disposed to believe. For we have already seen that the blood does not pass through the capillary vessels as a system of inert tubes, but is incessantly changed in constitution during its passage. It gives up many of its ingredients to the surrounding parts by exudation, and in return absorbs from them a multitude of new substances. So that the venous blood is composed in large quantity of ingredients which have been supplied by the tissues themselves; and these are brought back to the heart by the venous current, without having penetrated directly into it from the arteries. The fluid in the lymphatic vessels, therefore, and the blood in the veins, are both derived, to a great extent, from the same source. The processes of exudation and absorption in the tissues give rise to a certain quantity of materials, part of which are taken up by the veins, and part by the lymphatics; and both are then conveyed inward by these two sets of vessels to the centre of the circulation, and there mingled with the general mass of the circulating fluid. It is easy to see, then, that the lymphatic vessels really form an integral part of the great circulatory system.

Let us see what are the anatomical peculiarities of these vessels, and their relation to the organs and tissues.

The lymphatics may be regarded as a system of vessels more particularly connected with the *membranous parts* of the body, viz.: the skin, the mucous membranes, the serous and synovial surfaces, and the inner tunic of the arteries and veins. For though it is very probable that they also originate in the deeper portions of the organs, yet their commencement has only been demonstrated by injections in the parts which I have mentioned. So far as we can ascertain, they begin here, as I have already said, by vascular networks or plexuses. These plexuses are not very unlike those of the capillary blood-vessels in certain parts; and the minute lymphatics uniting gradually with each other, form the efferent canals which pass onward from the membranous tissues toward the heart.

Now this is all that it is possible to say with absolute certainty in regard to the commencement of the lymphatic system. Notwithstanding the resemblance in form between the capillary plexuses of the lymphatics and the blood-vessels, it is most probable that they are quite distinct from each other anatomically. It has been supposed, at various times, that there might be communications between them, and even that the lymphatic plexus might be a direct continuation of that originating from the smaller arteries; so that the more fluid and colorless portions of the blood might pass directly from the terminal blood-vessels into the absorbent system. Even Milne Edwards at one time entertained this view; but he has since abandoned it, and declares his conviction that the anatomical evidence is in favor of a complete separation between the two vascular systems.

At all events, so far as we can rely upon minute examination, the commencement of the lymphatic system is absolutely in the substance of the membranous tissues, and is independent of the arteries and capillary blood-vessels.

But there is another peculiarity of these lymphatics, which is equally important with their independent origin: that is, their relation with the lymphatic ganglia, or glands. After passing for a short distance from without inward, the lymphatic vessels pass into the substance of certain glandular-looking bodies, situated generally in the flexures of the joints, in the mesentery, on the anterior aspect of the spinal column, &c.; and then, emerging from the other side of these glands, pass onward a certain distance farther, when they enter another series of glands of the same kind, thus passing in succession through several sets of glandular organs, before they finally terminate in the great veins near the heart.

As to the precise arrangement of the lymphatic vessels in the interior of the glands, we know that after entering the glands they at once

break up into minute branches, which become excessively convoluted and intertwined with capillary blood-vessels, and then, by uniting again, give origin to new trunks, which leave the gland on its opposite surface. They are probably continuous throughout with each other, and quite disconnected with the blood-vessels, except by intimate contact and adhesion. According to M. Colin, of Alfort, beside the minute and convoluted vessels, there are always some large branches, which pass directly through the gland, from the afferent to the efferent vessels; so that only a portion of the lymph in each gland is distributed to its ultimate glandular plexus. This portion, however, in passing through these organs, is evidently subjected to some glandular influence, which may serve to modify its composition.

Now even this peculiarity is not altogether a distinctive one, as between the lymphatics and the blood-vessels. For the blood, also, as we know, in the course of its circulation, passes through certain glandular organs, such as the thyroid and thymus glands, the spleen, the supra-renal capsules, &c., in which no proper secretion is formed, but only a change of constitution effected in the blood itself. No doubt, a somewhat similar process takes place, in the absorbent glands, for the lymph.

After passing through these glandular organs, the lymphatic vessels, derived from the external surfaces and the internal organs, unite into two great trunks: the *thoracic duct*, which collects the fluid of the absorbents from the lower extremities, the intestines and other abdominal organs, the left upper extremity, and the left side of the head and neck, and terminates in the left subclavian vein, at the junction of the internal jugular; and the *right lymphatic* duct, which collects the fluid from the right upper extremity and right side of the head and neck, and empties into the right subclavian vein, at a corresponding point with the other.

Thus nearly all the lymph from the external parts, and the whole of that from the abdominal organs, passes, by the thoracic duct, into the left subclavian vein.

I need not remind you that during nearly the whole of their course, the lymphatics are provided with valves, like those of the veins, arranged generally in pairs, which prevent, to a certain extent, the reflux of the lymph.

Such, gentlemen, is the anatomical arrangement of the lymphatic or absorbent system. Now let us see what is the nature of the fluid which it contains, and what is its relation to the other animal fluids.

But, in the first place, I must remind you, that the exclusive idea

which was once entertained, with regard to the function of these vessels, has been given up for a long time. They were once named *absorbents*, because they were thought to possess exclusively the power of imbibing foreign substances. The absorption of medicines and poisonous substances, and the disappearance of tumors, were thought to be accomplished altogether through the medium of these vessels. Even the digested food was supposed to be taken up exclusively by the lacteals, (which are only the lymphatics of the intestine,) and the chyle in these vessels was thought to represent the entire product of digestion. We now know, however, how different the truth is from this. For absorption takes place by the capillary blood-vessels even more rapidly and abundantly than by the lymphatics; and almost any absorbable substance, exposed to a vascular surface, will pass into the blood directly, with much greater facility, than it can go round by the lymphatics and thoracic duct.

The lymphatics, therefore, are not by any means to be regarded as the special or exclusive organs of absorption. Still they are scattered so abundantly throughout the body, and do actually imbibe from the various parts so large a quantity of material, that their function is evidently an important one, and the fluid which they contain deserves to be examined in every respect with interest.

The lymph has only been obtained in a state of purity since experimenters have adopted the practice of operating upon the living animal in such a way as not to interfere seriously with the phenomena of the circulation. It has been obtained by Rees from the lacteal vessels and the lymphatics of the leg in the ass, and by Colin from the lacteals and thoracic duct of the ox, and from the lymphatics of the neck in the horse. I have frequently obtained it myself, from the thoracic duct of the dog and of the goat.

The analysis of these fluids shows, in the first place, a remarkable similarity between them and the plasma of the blood. They contain water, fibrin, albumen, fatty matters, and the usual saline substances, such as chlorides, phosphates, and the like, which occur in nearly all the animal fluids. At the same time, the lymph is decidedly poorer, in its albuminous ingredients, than the blood. All these particulars may be seen at a glance by referring to this analysis, by Lassaigne, of the fluid obtained by Colin, from the thoracic duct of a cow.

Water	964.0	parts per	thousand.
Fibrin	0.9	"	"
Albumen	28.0	"	"
Fat	0.4	"	"

Chloride of Sodium	5.0	parts per	thousand.
Carbonate, Phosphate and Sulphate } of Soda........	1.2	"	"
Phosphate of Lime............	0.5	"	"
	1,000.0		

Almost the first thing, however, that is noticed in experimenting upon this fluid, especially in the carnivorous animals, is, that its constitution varies very much at different times. In the ruminating and graminivorous animals, such as the sheep, ox, goat, horse, &c., it is either opalescent in appearance, with a slight amber tinge, or nearly transparent and colorless. In the carnivorous animals, such as the dog and cat, in the intervals of digestion, it is also opaline and amber colored, but soon after feeding, becomes of dense, opaque, milk-white, and continues to present that appearance until the processes of digestion and intestinal absorption are completed. It then regains its original aspect, and remains opaline or semi-transparent until digestion is again in progress.

The cause of this variable constitution of the fluid discharged by the thoracic duct is evidently the absorption of fatty substances from the intestine in digestion. We know that whenever fatty substances exist in considerable quantity in the food, they are emulsioned in the intestine by the action of the pancreatic and intestinal juices, and reduced to a white, creamy mixture of molecular fat, suspended in an albuminous menstruum. This mixture is then absorbed by the lymphatics of the mesentery, and transported by them through the thoracic duct to the subclavian vein. While its absorption is going on, therefore, the fluid of the thoracic duct alters its appearance, becomes white and opaque, and is then called *chyle;* so that there are two different conditions, in which the contents of the great lymphatic trunks present different appearances. In the fasting condition, these vessels contain a semi-transparent, or opaline and nearly colorless lymph; during digestion, an opaque, milky chyle. It is on that account that the lymphatics of the mesentery are called "lacteals."

The chyle, accordingly, is nothing more than the lymph which is constantly absorbed by the lymphatic system everywhere, with the addition of more or less fatty ingredients taken up from the intestine during the digestion of food.

Now, the chylous matter itself is not absorbed altogether by the lacteals. On the contrary, a very large proportion of it is taken up by the blood-vessels of the intestine and carried away by the portal

vein. I have already shown you in a previous lecture some of the portal blood of a dog, drawn during digestion, which contained an abundance of chylous matter, and in which the serum was very distinctly turbid and milky in appearance. Here, then, is still another point of resemblance between the lymphatic and venous circulations. In the intervals of digestion, both the lymph coming from the intestine, and the serum of the portal blood, are nearly transparent; during digestion, they both become turbid and milky from the same cause, viz., the absorption of fat.

The results of analysis show positively that the varying appearance of the lymph is really due to this cause, as you will see from this table, in which the comparative analysis, by Dr. Rees, of the lymph and chyle of the same animal, are placed side by side.

	Lymph.	Chyle.
Water	965.36	902.37
Albumen	12.00	35.16
Fibrin	1.20	3.70
Spirit Extract	2.40	3.32
Water Extract	13.19	12.33
Fat	traces.	36.01
Saline matters	5.85	7.11
	1,000 00	1,000 00

Though the chyle is also richer in albuminous matters than the lymph, it is evident that the principal difference between them consists in the proportions of fat which they contain.

The best mode of obtaining the chyle in abundant quantity is to expose the thoracic duct at the root of the neck, where it turns over to join the left subclavian vein, and insert into it a small silver canula, which should be secured by a ligature. If the operation be successful, the fluid will then continue to flow from the end of the canula, and can be collected for examination.

The experiment is most easily performed upon the ruminating animals, since, in them, the termination of the thoracic duct is comparatively superficial, and may be exposed without making too extensive a wound. I have succeeded very well in the goat, by etherizing the animal, exposing the duct, and inserting the canula, and then allowing the effects of the etherization to pass off. In the course of an hour or two, the animal will be sufficiently recovered to feed readily, and the chyle then begins to flow with considerable freedom from the end of the canula. It is noticeable, however, in the case of the chyle, as it is with almost all the other animal fluids, that its flow is not uni-

form, but that it is discharged quite abundantly for a few moments in succession, then becomes scanty, or almost stops, and after a short interval is again discharged with rapidity, as before. These two conditions alternate with each other, somewhat irregularly, throughout the whole course of the operation.

The following experiment will show the mode in which the chyle was collected in these cases:

Experiment, March 16*th*, 1859.—A young kid, weighing fourteen pounds, was etherized, and a canula inserted into the thoracic duct at the root of the neck. Lymph immediately began to flow freely. The animal soon recovered from the etherization, and fed readily on chopped potato and cabbage-leaves. In three hours and a half, 1,890 grains of fluid were collected from the canula. The lymph was, for the most part, opaline and slightly amber-colored; though at times it was nearly transparent and colorless. It coagulated very readily, and the clots afterward contracted, assuming a rosy tinge, while the serum remained opalescent and nearly colorless. There was, at no time, any milky opacity in this instance. The lymph smelt strongly of ether, twenty-four hours afterward.

In the dog, this plan of operation is not usually successful, since the termination of the thoracic duct lies very deep, and requires a somewhat extensive and laborious dissection to reach it in the living subject. Beside, these animals refuse food for many hours after having been fully etherized, and their digestive process remains more or less suspended during the same time. The plan which I have found most successful in them is to produce insensibility by the inoculation of woorara, and then to expose the duct, and insert the canula into its extremity, keeping up artificial respiration during the mean time, by means of a bellows inserted into the trachea. This can be done either during the intervals of digestion, or while the process is actually going on, and the appearance and quantity of the lymph and chyle can be ascertained at these different periods.

Here is some chyle which was obtained yesterday, in this manner, from a dog, while digestion was in progress. You see it is a perfectly white milky, or rather cream-like fluid, very abundant, and evidently rich in organic ingredients. It has coagulated firmly, showing the presence of fibrin; and, you observe, in some of the test-tubes the clots have contracted considerably, and at the same time, a milky serum has separated from them, which remains permanently fluid.

A remarkable fact in regard to these clots is that, as they contract in size after having solidified, they almost always assume more or less of a rosy tint. That is the case with those which we have here. Various opinions have been expressed as to the cause of this redness of the clot in chyle and lymph, but a little direct examination is sufficient to determine the question. The microscope shows that it is owing to the presence of blood-globules which are to be found, in small quantities, in the substance of the coagulum.

The blood-globules are discharged with the chyle, at the time when it is drawn from the thoracic duct. And I have often noticed, in doing this experiment, that the chyle which is first discharged, immediately after the insertion of the canula into the duct, is of a perfectly pure opaque, chalky-white. When a drachm or two of it is collected in the test-tube, it has not exactly the color of milk or cream, but looks more like a thick magma of chalk or calcined magnesia with water. But after the process has been going on a short time, the fluid begins to assume a slight yellowish tinge, and then looks like milk or cream. Still later it often presents, for a few minutes, a decidedly pinkish hue; but this is so slight in intensity, and the quantity which presents it so small, that it disappears, for the most part, when mixed with the rest of the chyle. However, this color is always found, on examination, to be due to the presence of blood-globules in appreciable quantity.

Now it is important to know how this blood becomes mingled with the chyle.

Some have thought that the blood-globules are actually produced in the chyle itself; that they grow and are developed in the fluid, as it passes through the lymphatic vessels and the thoracic duct. But this opinion has not met with general adoption. Others have been led to the belief that there must be some normal communications between the sanguiferous and lymphatic systems, through which the blood-globules gain entrance. The constancy with which blood or its evidences have been found, in small quantity, in the chyle and lymph, by all observers, has been thought to prove that these communications exist, though they must be very minute and few in number.

But there is still a third opinion in regard to this matter, which I am very much inclined to believe is the correct one. I have already told you, that when the chyle first begins to run from the thoracic duct it is almost always perfectly white, and free from blood. It is only after it has been running for a certain time, that blood-globules begin to be mingled with it; and, as a general thing, the longer the

experiment is continued, the more constant and more abundant is the admixture of blood. This makes it exceedingly probable that the presence of blood in the chyle is not a normal, but an accidental occurrence; and that it is due to the disturbance of the circulation produced by the conditions of the experiment itself. The narcotized condition of the animal, and the artificial respiration which is practiced, may undoubtedly be sufficient to cause local obstructions of the circulation, in various abdominal organs, and particularly in the mesenteric glands. When we remember how intimately the blood-vessels and lymphatics are mingled in these glands, it is easy to see that a congestion here may readily give rise to a slight admixture of blood with the chyle, by the rupture of capillary vessels.

But how is it that the clots which form in the lymph and chyle become red after their coagulation, when no such color was visible before?

This circumstance has been considered as a very singular one, though it is in reality quite easy of explanation. Before coagulation, a very small quantity of blood-globules are disseminated through the whole mass of the chyle, and are so scanty, in proportion to the other ingredients, that no reddish color is perceptible in the fluid. But where coagulation takes place, the clot entangles the blood-globules in its substance, precisely as it happens in the coagulation of blood. Then, when the clot contracts and expels the serum, all the blood-globules are retained in its meshes, and as it diminishes in size, it becomes reddish or rosy in tinge, simply because the color which was before disseminated through a large mass of fluid, is now concentrated in the solid coagulum.

The following experiment will show the characters which belong to the lymph in the thoracic duct of the dog, while in a fasting condition, and when he has been a long time without food containing fat.

Experiment, Feb. 25th, 1859.—A healthy dog weighing thirty-two pounds was kept without food for forty-eight hours. He was then fed with about half a pound of perfectly lean meat. He then had no food till twenty-four hours later, when he received one pound of similar lean meat. Next day at 9 A. M., he was inoculated with woorara, and a canula inserted into the thoracic duct, at the root of the neck. Lymph began to flow from the canula at ten o'clock, that is, eighteen and a half hours after feeding, and at least three days and a half after the last meal of fat meat.

In one hour, 425 grains of lymph flowed from the canula. At first it was of a very light opaline appearance, with a slight amber tinge;

then for ten or fifteen minutes, rather more whitish and opaque; then opaline and amber-colored as before. It coagulated very readily, and a prompt separation took place between the clot and the serum. After standing for twenty-four hours, the volume of the serum was a little more than twice as great as that of the contracted clot.

The serum was slightly alkaline in reaction. When viewed in thin layers, it was only a little opalescent; but, when collected in a test-tube or precipitating glass, it was strongly opaline, and of a rather dingy hue, like a thin solution of boiled starch. This lymyh had none of the white milky look which belongs to the chyle; but still it was strongly opaline, and was very far from presenting a clear and transparent appearance. The serum, spread out in thin layers, and examined by the microscope, showed only a multitude of molecular granulations, so excessively fine that they might easily be overlooked, and appearing only as a faint *shading* over the field of the microscope. The serum also contained some red and white blood-globules.

The clot, after some hours' exposure and contraction, became, in parts, quite rosy in tinge. It was firm in consistency, and, when examined under the microscope, showed evident traces of fibrillation, like the coagulum of blood. Those parts which were rosy in color contained an abundance of red globules, and also a number of rounded, granular, colorless corpuscles, which were not soluble in dilute acetic acid, but were only rendered more distinct and granular by that reagent. These were the only corpuscles visible in such parts of the clot as remained white.

On boiling some of the serum in a test-tube, it became more whitish and opaque, but did not solidify. Even when previously acidified by the addition of a small quantity of muriatic acid, boiling did not produce in it any more marked change. Nitric acid, on the contrary, threw down a dense, white, flocculent coagulum.

The blood of the thoracic veins in this case coagulated readily, and the coagulum afterward exuded a perfectly clear and transparent serum.

The stomach was perfectly empty. The small intestine contained in its upper part only a little frothy and yellowish bilious-looking fluid, and at its lower part, a moderate quantity of rather thick, dark-brown, or olive-colored material. The middle portions of the intestine were entirely empty.

But very soon after digestion has commenced, the chyle becomes white and opaque, as shown in the following experiment:

Experiment, March 15th, 1859.—A dog, weighing thirty-three and

a half pounds, was fed at half past twelve o'clock with fat and lean meat, and at half past three, P. M., a canula was inserted into the thoracic duct, the animal having been previously poisoned with woorara, and artificial respiration established in the usual way.

During the next two hours and a half, 2,510 grains of opaque, white and faintly rose-colored chyle flowed from the canula. This chyle coagulated, like the other specimens; the clots, as they contracted, becoming more distinctly rose-colored, and the serum remaining of a pure opaque white. At the end of forty-eight hours the serum was much larger in volume than the clot.

Notwithstanding the almost constant admixture of blood in small quantity with the chyle, if the experiment be much prolonged, the chyle may sometimes continue to run, perfectly pure and unmixed with blood, for at least an hour after the insertion of the canula, and two hours after the commencement of the operation. This was the case in the following experiment.

Experiment, February 21st, 1859.—A healthy dog, weighing twenty-four and a half pounds, was fed with a mixture of fat and lean meat. Two and a half hours afterward he was inoculated with woorara, artificial respiration established, and a canula inserted into the thoracic duct, at the root of the neck. The operation was finished, and chyle began to flow, three hours and a quarter after the time of feeding. In one hour, 240 grains of chyle flowed from the canula. It was perfectly opaque, and of a white color, with an exceedingly faint tinge of amber. It coagulated almost as fast as it was withdrawn from the duct.

After coagulation, the clot contracted to such an extent that at the end of twenty-four hours the clot and serum were nearly equal in volume. This clot did not become in the least rosy on exposure to the air, even at the end of twenty-four hours; and the microscope showed no red globules in its substance, but only colorless and fatty molecules. The serum was almost or quite as opaque as the clot.

After the chyle has once become opaque and milky, in consequence of the commencement of the digestive process, it continues to present the same characters for several hours. At least this is the case in the carnivorous animals, in which the digestive process is comparatively slow. In the dog, the chyle continues milky for at least seven or eight hours after digestion has commenced.

Experiment, February 16th, 1859.—A healthy dog, weighing fifteen pounds and a half, was fed at 8 A. M. with moderately fat meat. At 2 o'clock, P. M., he was inoculated with woorara, and as soon as the

poison had operated and artificial respiration was established, the thoracic duct was exposed at the root of the neck, and a canula inserted into it. The operation was terminated, and the canula fixed in its position at 3 P. M.; that is, seven hours after the time of feeding.

The chyle then flowed from the canula in the following quantities:

During the first half hour	464	grains.
" second "	376	"
In the whole hour	840	"

This was, in volume, fourteen fluid drachms.

The chyle which flowed during the first fifteen or twenty minutes was of a perfectly pure opaque white; but that which flowed subsequently, and especially during the last half hour, had a very faint and delicate rosy tinge. It was all quite fluid, but coagulated soon after being withdrawn from the canula.

After coagulation, a separation slowly took place between the clot and serum; so that at the end of twenty-four hours, the serum which had been exuded was equal in volume to the clot, and at the end of forty-eight hours considerably larger.

Portions of the clot became, in a few hours after coagulation, of a very distinct rosy hue; but the serum remained of a nearly pure, opaque, uniform white. Examined by the microscope, the serum showed a multitude of fatty molecules, too minute for measurement, and a very few white and red blood-globules. The clot showed a very distinct microscopic fibrillation, and in those parts which had become most rosy in tinge, an abundance of red blood-globules.

Even so late as thirteen hours after feeding, the chyle still has a strongly-marked opacity and white color. In the following experiments the chyle was examined for sugar, and also for the elements of the bile, but neither of these substances was found in it.

Experiment, February, 1859.—A very vigorous and well-conditioned dog, weighing thirty-one pounds, was inoculated with woorara twelve hours after feeding on mixed lean and fat meat. As soon as the breathing stopped, artificial respiration was established, and a canula was then inserted into the thoracic duct at the top of the chest, and secured by ligature, so as to exclude all the lymphatic branches coming from the neck and shoulder. The operation was finished and chyle began to flow through the canula, thirteen hours and a quarter after the animal had been fed.

The chyle then ran from the canula in the following quantities:

During the first hour..............	222 grains.
" " second "	208 "
In two hours.....................	430 grains.

Making, by volume, seven fluid drachms.

This chyle was quite whitish and opaque, though not absolutely milky in appearance. It had a slightly alkaline reaction. It coagulated rapidly in the test-tube, forming a rather loose gelatinous clot; so that it resembled, after coagulation, soft-boiled white of egg, both in consistency and appearance. It exuded, after a time, a watery-looking opaline serum.

The chyle was then examined in the following manner: The whole of it was evaporated to dryness by the water-bath, leaving 29.5 grains of solid residue. The dry residue was then extracted with ether. The ethereal solution was of a clear, light yellow color. It became turbid on the addition of water; and, after standing for some time in the test-tube, a thick yellowish-white fluid layer collected on the surface of the mixture. This layer, examined by the microscope, showed a great abundance of circular fluid oil-drops.

The remainder of the dry residue, which was undissolved by ether, weighed 22 grains. It was treated with 5 fluid drachms of alcohol, (at 95 per cent.,) and the alcoholic solution, which was nearly colorless, precipitated freely with ether in excess. After standing in the test-tube for nearly twenty-four hours, a white precipitate had collected at the bottom of the tube. This precipitate was freely soluble in water; but the watery solution, on being treated with Pettenkofer's test for bile, gave no evidence of the presence of the biliary substances.

A part of the same alcoholic solution was evaporated to dryness, and the residue dissolved in distilled water. The watery solution was then treated with Trommer's test for sugar, but gave no indication of the presence of that substance.

The stomach of this animal contained a few remains of partially digested muscular tissue, but no perceptible quantity of fat. The small intestine was nearly empty, containing only a little greenish, pasty, semi-fluid matter.

These, gentlemen, are the appearances presented by the chyle, when drawn from the thoracic duct at various periods of the digestive process. Let us now see what is the mechanism by which the contents of the lacteals and lymphatics are conveyed through the vessels of the absorbent system, and finally discharged into the current of the venous blood.

And in the first place, the most important of the forces, by which the lymph and chyle are propelled through their vessels, is that by which they are originally absorbed and taken up by these vessels. Throughout the entire extent of the lymphatic system an extensive process of endosmosis is incessantly going on, by which the ingredients of the lymph are incessantly imbibed from the surrounding tissues, and compelled to pass into the lymphatic vessels. The lymphatics are in this way constantly filled at their origin; and, by mere force of accumulation, the fluids, after filling their own vessels, are compelled to discharge themselves into the large veins at which the lymphatic trunks terminate.

But the motion of the fluids in the lymphatic system is hastened by various other means in the living body.

Of these means, the movements of respiration are among the most important. As the chest expands, the backward pressure is partly lifted off from all the vessels contained in its cavity, and the resistance to the onward flow of the lymph and chyle diminished. During expiration, on the other hand, the reflux of the fluids is prevented, to a great extent, by the valves of the lymphatic vessels; and consequently, by the alternate motions of expansion and collapse, the fluids are gently solicited toward the chest, and urged forward through the thoracic duct.

A similar effect is produced by the movements of the trunk and limbs. For, as the muscles contract, they compress the lymphatics, and drive their contents onward toward the heart, their valves still preventing a reflux; and by a repetition of such motions the lymph is incessantly driven from the more distant to the more central parts of the vascular system.

You will already notice, gentlemen, that here is still another resemblance between the lymphatic and venous systems. For it is precisely by these movements of the chest and the voluntary muscles, that the venous blood is hastened on its course, and assisted in its movement from the extremities toward the heart.

In experimenting upon the thoracic duct in the manner which I have described, it is easy to see that the movements of the heart and arteries influence, very often, the discharge of the fluids from its orifice. For the thoracic duct, as you will remember, crosses the spinal column, in the chest, directly behind the arch of the aorta; and in this situation it is exposed to very considerable pressure by the great arterial trunk. It very often happens, therefore, that when a canula is inserted into the thoracic duct in the living animal, the chyle is seen to be

forcibly projected from its extremity at each arterial pulsation. I have frequently observed this, and the appearance is sometimes very striking and peculiar, the white milky stream passing out from the end of the canula in interrupted jets, like blood coming from a small artery, when the circulation is somewhat enfeebled.

But when artificial respiration is employed, as in the experiments which I have performed, with woorara as the stupefying agent, the influence of the respiratory movements is modified in a curious manner. In natural breathing, that part of the thoracic duct which is contained within the thoracic cavity, is filled by the expanding movement of the chest, and emptied by its collapse; so that the discharge of the chyle from the extremity of the duct is increased at the moment of expiration, and diminished, or suspended, at the moment of expiration. But in artificial respiration, where the lungs are filled by direct insufflation, and not by a movement of inhalation, the effect is exactly the opposite. For then the chyle is discharged abundantly at the time of insufflation, when the lungs are filled and the other thoracic organs compressed; and in the interval it becomes scanty, or ceases altogether. However, this is evidently dependent on the unnatural mechanism of the respiratory movements, and has no relation to what takes place in the healthy condition.

Undoubtedly the movement of the chyle is also favored by the peristaltic action of the intestines; for it may always be increased, in such experiments as I have detailed, by gently kneading the abdomen, and imitating, as nearly as possible, the natural action of these parts while digestion is in active progress.

There is still another very important question with regard to the lymph and chyle, and that is, the *total daily quantity* of these fluids.

In the earlier periods of physiological investigation, the quantity of the lymph and chyle was taken at an absurdly low estimate. For then, physiologists were not acquainted with the great rapidity and energy with which the process of endosmosis is accomplished in the living body; and in the second place, they were not in the habit of obtaining the animal fluids by direct experiment, and ascertaining their quantity by actual measurement.

As soon as this method was adopted, it was found that the daily quantity of the chyle and lymph far surpassed all previous expectation.

M. Colin, who has paid a great deal of attention to this part of the subject, has arrived at very remarkable results. In connection with M. Bérard, he measured the chyle discharged from the thoracic duct

of an ox during twenty-four hours, and found it to exceed *eighty pounds*. In other experiments of the same kind, he obtained still larger quantities. From two experiments on the horse, extending over a period of twelve hours each, he calculates the quantity of chyle and lymph in this animal as from twelve to fifteen thousand grains per hour, or between forty and fifty pounds per day. But in the ruminating animals, according to his observations, the quantity is considerably greater. In an ordinary-sized cow, the smallest quantity obtained in an experiment extending over a period of twelve hours, was a little over 9,000 grains in fifteen minutes; that is, five pounds an hour, or 120 pounds per day. In another experiment, with a young bull, he actually obtained a little over 100 pounds from a fistula of the thoracic duct, in twenty-four hours.

From the results which I have obtained in similar observations, I do not believe that these estimates are at all exaggerated.

In the experiments, for example, which I have already detailed to you, together with others of a similar nature, I have obtained from the thoracic duct the following quantities of chyle: $3\frac{1}{4}$ hours after feeding, 420 grains in an hour, in a dog weighing $24\frac{1}{2}$ pounds; 7 hours after feeding, 430 grains in two hours, in a dog weighing 31 pounds; and $18\frac{1}{2}$ hours after feeding, 425 grains in an hour, in a dog weighing 32 pounds. The average of all these results gives the total quantity of lymph and chyle in the dog during twenty-four hours, as very nearly $4\frac{1}{2}$ per cent. of entire weight of the animal; and this proportion, in a horse weighing ten hundred weight, would be 45 pounds. This is substantially the same result as that obtained by Colin in his experiments.

In the experiment upon the kid, also, which I have detailed to you, you will remember that 1,890 grains of lymph and chyle were obtained in three hours and a half. This animal weighed only fourteen pounds. The above quantity, therefore, would represent 540 grains in one hour, and 12,960 grains, or 1.85 pounds, in twenty-four hours; and in a ruminating animal weighing 1,000 pounds, this would correspond to 132 pounds of lymph and chyle discharged by the thoracic duct in the course of the day.

We see, then, that this enormous quantity of animal fluid represents an exceedingly important part of the circulatory process. For the whole of it is absorbed from the various tissues, or from the products of digestion in the intestine, and, flowing inward toward the heart, is at once mingled with the venous blood, and thus forms an integral part of the circulating fluid. The function of the lymphatic system,

accordingly, increases very much the extent and activity of that great secondary circulation or interchange of the animal fluids, which we have already studied in part. For, in the human subject, supposing the quantity of chyle and lymph to be no larger than in the exclusively carnivorous animals, these fluids would amount to $4\frac{1}{2}$ per cent. of the weight of the whole body; and for a man weighing 140 pounds, this would be equivalent to between 6 and $6\frac{1}{2}$ pounds per day. Of this quantity, about 3 pounds consist of chyle, and about $3\frac{1}{2}$ pounds of lymph.

We can appreciate the physiological activity, then, which is exercised in the phenomena of absorption and transudation, by uniting, in a single calculation, the whole amount of the fluids secreted and reabsorbed by the various organs and membranes in the course of twenty-four hours. In this table the quantities are all calculated for a man weighing 140 pounds.

Secreted and reabsorbed during 24 hours:

Saliva	20,164	grs.	or	2.880	pounds.
Gastric juice	98,000	"	"	14.000	"
Bile	16,940	"	"	2.420	"
Pancreatic juice	13,020	"	"	1.860	"
Lymph	27,048	"	"	3.864	"
				25.024	

A little over twenty-five pounds, therefore, of animal fluids pass and repass through the tissues and organs every day. And this is in addition to the great movement of the circulating blood, which supplies the materials for all this transudation, and which, receiving back into its own current the substances which have passed through the animal membranes, again mingles their materials together, and reorganizes them into a nutritious and inexhaustible circulating fluid.

We have now, gentlemen, gone through with the different parts of the study of the circulation, and with this lecture the present course terminates. I am very well aware that we are far from having exhausted the subject, in the short time which we have now devoted to it together; but I have endeavored to present to you the most important of the phenomena connected with the circulation, and to exhibit, more particularly, the progress which our knowledge has made with regard to it, in the last few years. These advances, you will see, have not been made by the help of any ingenious speculation, but simply by the judicious and persevering employment of direct experimental observation. By a continued use of the same means, we may hope to enlarge still further the boundaries of our knowledge, and to

gain a still deeper insight into the most intricate and the most varied of all the animal functions. Finally, gentlemen, I must express to you my acknowledgments for the constancy with which you have attended these lectures, and the interest you have manifested in the topics which have been discussed; and in return, I can only hope that the gratification you have derived may have borne some proportion to the merits of the subject, and its importance in physiological science.

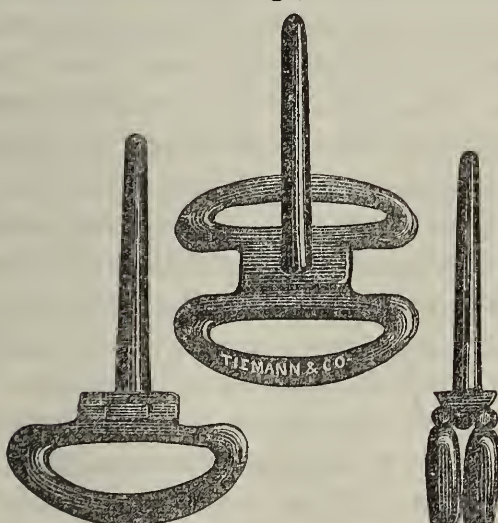
Seven Cases of Displacements of the Uterus Successfully Treated by a New Stem and Wing Pessary. By D. S. Conant, M.D., New York, Prof. of Surgery in the University of Vermont, and of Anatomy and Physiology in the Medical School of Maine.

(Read before the N. Y. Medico-Chirurgical College, Nov. 15, 1860.)

In presenting the following instrument to the Society, I am aware that intra-uterine pessaries are ignored, and, indeed, considered dangerous by some who are making diseases of females the special object of their studies.

But this instrument has been so successful in my own practice, and the principle so successfully carried out by Prof. E. R. Peaslee, from whom I received first my suggestions, that I feel warranted in presenting it, with the following cases in which it has been used, to this Society.

The instrument consists of an intra-uterine stem and a vaginal body with two lateral wings, and is made entirely of hard rubber.



(Fig. 3.) (Fig. 1.) (Fig. 2.)

Fig. 1. Instrument as worn by the patient.
Fig. 2. Front view of Instrunent as introduced.
Fig. 3. Side view of Instrument as introduced.

In order that the patient may derive the greatest amount of benefit from its use, the instrument must be adapted to the capacity of the vagina and depth of the uterus, the stem being less in length than the depth of the uterine cavity by about three lines. This point should be very carefully looked to, since, if the fundus rests upon the end of the instrument, the mucous membrane will become irritated and the patient suffer a great deal of unnecessary pain.

To avoid this, I have directed Tiemann & Co., the man-

ufacturers, to make four sizes, and in case a given stem is too long, it has only to be cut off and smoothly polished to make it suitable for the smaller organ, the depth being first ascertained by means of the sound, or a small catheter.

This instrument is intended to correct malpositions of the uterus, especially flexions and versions; but there are certain conditions of the organ which contra-indicate the use of any intra-uterine instrument, such as severe congestion, inflammation, or ulceration of the uterus itself, or of any of its appendages.

These pathological conditions must be removed before using any mechanical support within the vagina or uterus. If the disease depends upon the displacement, the instrument will be borne much earlier than under other circumstances, and the applications of ointment, &c., by means of the suppository tube, may be continued.

The first menstrual period will be prolonged and the flow considerably increased by the presence of the instrument, and it is necessary that the patient be judiciously managed during the time, absolute rest being enjoined for the first two or three days.

The same treatment may be required during the second and third menstrual periods. In introducing the instrument, it is necessary to ascertain if the os tincæ and os uteri are capacious enough to receive the stem; if not, they should be dilated first, by means of compressed sponge or the dilator; if this is not done, we may fail in our attempt at introduction; and even should we succeed, the patient will be likely to have considerable pain, while the cervix uteri is adapting itself to the size of the stem, which will be accomplished in from twenty-four to thirty-six hours. Again, the uterus should be placed in its proper position by means of the uterine sound, before we attempt to use the instrument, or we may fail to carry its point beyond the uterine bend. When the above indications are answered, the index finger of the left hand is carried in so as to feel the os tincæ, and with the other hand the point of the stem is carefully carried upon the palmar side of the finger already introduced until it reaches the os, when it is very readily guided by the point of the finger, so as to enter the cervix uteri.

Ordinarily, we would meet with no further obstruction until it reaches the axis of uterine mobility. If the malposition is anteflexion, the index finger is bent forward, and the fundus uteri pushed before it so as to straighten the canal. If the malposition is retroflexion, the point of the finger is carried back so as to reach the fundus uteri posterior to the cervix, and lift it up for the same purpose. When once the apex of the instrument has passed the point of flexure, we have

then no further trouble, but now attend to the wings of the instrument, which are pressing against the perineum of the patient; this is pressed firmly backward, so as to let the posterior extremity of the wings glide into the vagina upon its posterior walls. When this is accomplished the instrument slides easily up to its position; the wings are now opened by the index finger, and all the parts properly adjusted. After a few moments' rest the patient is allowed to sit up, when, if the instrument is of proper size and properly applied, the patient should have but little pain, and this ought gradually to diminish and entirely disappear in one or two days. If, on the contrary, the pain does not subside, and especially if it should increase, it is a pretty sure indication that there is some point of unnecessary irritation, and the instrument should be removed, and not again applied until this irritation has subsided; this I have been obliged to do only in one case, which was the case of a patient who came from Ohio, and was exceedingly anxious to return home early. The seat of irritation being exactly at the point of uterine flexure, the instrument seemed rather to increase than diminish it. The following cases will perhaps be sufficient to illustrate the utility of the instrument.

Case No. 1.—*Retroversion.*—In April, 1859, I was called to see Mrs. ———, aged about 35; residing in this city, when she gave me the following history of her illness: Since her last confinement, which was two years previous, she had suffered almost constantly from pain in the lower part of her back, and also from bearing-down or dragging pain in the anterior portion of the abdomen, palpitation of the heart, and general debility; but during the last two months all her symptoms had been aggravated. There was more or less difficulty in micturition, and considerable pain during the act of defecation.

Her menstrual flow had been regular, but profuse since she ceased to nurse her child, and for the five or six weeks preceding my visit, she had been flowing quite profusely all the time. I found her depressed in spirits, pale and haggard in her countenance, the mucous membrane of her lips almost as white as the skin, and so exceedingly weak, that she could hardly get up stairs without assistance. I directed her to use bitter tonics, iron, good food, &c., and an enema every night, of cold water and laudanum. This treatment was followed up for a few days with partial success, when I made an examination, and found that my patient was suffering from complete retroversion, which I corrected for the time, by means of Simpson's sound; but at my next visit I found that the organ had again become displaced; I again replaced it, and used a single ring pessary; this was partially successful only, and

after a few days' trial, finding no point of irritation within the uterus, I determined to use my intra-uterine instrument; this had the desired effect. The hæmorrhage ceased in forty-eight hours; and all the unpleasant symptoms, except the debility, entirely disappeared. The patient wore the instrument four months, and in the mean time recovered her health perfectly; her menstrual periods were regular and normal, except the first, which lasted five days, and was a little profuse. The instrument was removed at this time, as the patient felt so perfectly well that she thought she could do without it; but, at the end of five weeks, all her unpleasant symptoms began to reappear, and on the eleventh day of October, the same instrument was again replaced, when all the unpleasant symptoms again subsided. The patient now insisted upon wearing the instrument, which she has done up to October 29th, 1860, when it was removed, and found to be in perfect condition, after being worn one year and eighteen days; since its removal, the patient expresses great satisfaction to find herself so well.

Case No. 2.—*Anteflexion.*—In Sept. 1859, Mrs. ———, aged about 26, had one child, four years old, consulted me in regard to some uterine derangement from which she had been suffering for some time previous. Three years before, I had made one application to an ulcer upon the anterior lip of the os uteri, after which she was treated by her physician at home, which is about 100 miles from this city. Upon making an examination, I found well-marked ulceration upon the anterior lip of the os uteri and complete anteflexion of the organ. I made applications of the nitrate of silver at stated periods to the ulcer, and it very readily healed at each period. I also replaced the organ by means of the uterine sound. On the second of November I found the ulcer healed, and that the intra-uterine irritation had entirely subsided. I therefore used a pessary, which I had had manufactured for this patient; it gave her almost no pain after it was introduced, and the next day she left for her home in the country. Some two weeks after she returned, complaining of considerable pain in the left ovary and broad ligament; the instrument was readjusted without being removed, and the pain immediately ceased. The patient has now worn the instrument more than one full year, and has been completely relieved of all the unpleasant symptoms from which she previously suffered; she can walk or dance without unusual fatigue, and expresses herself as feeling as light as a feather. This patient returned Nov. 6th, 1860, saying that there had been no period since the instrument was last adjusted that she had been made aware of its presence. I found the instrument perfectly in place, and on removing it found

that it had undergone no change whatever, as the Society can see by examining the instrument. The uterus itself did not seem inclined to assume any abnormal position now that its support was removed.

Case No. 3.—*Anteflexion.*—Mrs. ———, aged about 36, having borne three children, consulted me in October, 1859, with symptoms of uterine displacement. I found decided anteflexion, with considerable irritation of the uterine mucous membrane; having removed this, I introduced the intra-uterine instrument about the middle of November; two weeks later she went home to Vermont, and has now worn the instrument more than one full year with the utmost comfort and relief.

Case. No. 4.—*Lateral Version.*—Mrs. F., aged about 40; married 20 years; without children; consulted me in June, 1856; upon examination, I found complete occlusion of the external os, with lateral version. I perforated the os tincæ, and, upon introducing the sound, found the internal os also nearly closed; after dilating this, my patient was so much relieved from her dysmenorrhœa, that she considered herself cured. In 1858, she again put herself under my care, with symptoms of uterine displacement, and I used various modifications of my instrument, which were worn with perfect comfort, and great relief, but the result was not so satisfactory as it had been in those cases where the displacement was anterior or posterior.

Case No. 5.—*Anteflexion.*—Mrs. ———, aged about 32; married five years without children; consulted me in March, 1856; suffering from complete anteflexion, with a fibrous tumor in the anterior wall of the uterus; she had become almost exsanguinated from menorrhagia. After replacing the uterus with the sound every day for nearly a month, I introduced the intra-uterine pessary, which the patient wore ten weeks. The menorrhagia entirely ceased, and my patient gained nine pounds the first four weeks that she wore the instrument. The tumor is now somewhat enlarged; so much so, as to prevent the organ from falling forward, and she has no hæmorrhage or other symptoms of uterine displacement.

Case No. 6.—*Anteversion.*—Mrs. ———, aged 22; married three months; suffering from great irritation in vagina and bladder; consulted me September 10th, 1859; upon examination, I found complete anteversion of the uterus. I replaced the organ and applied an ointment, astringent and narcotic in its character; the vaginal irritation very soon subsided, when I applied the intra-uterine instrumemt for the displaced organ; the patient experienced almost immediate relief from the vesical irritation, and from all other symptoms depending upon the

displaced organ. The patient wore the instrument about eight weeks; it was then removed, and in four or five weeks she returned, with many of her former symptoms of displacement. I then replaced the same instrument, which she wore for several months, with the same result.

Case No. 7.—*Retroversion.*—While at Burlington, or in the spring of 1859, I was called to a neighboring town in consultation. Mrs. ———, 20 years of age, had been suffering from retroversion, produced by jumping from a wagon some four years previously; she had dysmenorrhœa and menorrhagia to that extent that for the eighteen months previous she had been confined to her room and bed; the organ had already been replaced with the sound several times, and as I found no irritation, I immediately introduced one of the stem and wing pessaries; from this time the patient began to improve rapidly. She wore the instrument several months and regained her health almost perfectly, to the astonishment and delight of her husband and parents, and the utter chagrin of the physician who had attended her the previous four years.

I trust these seven cases are sufficient to report in full. I have, however, used this instrument in nine or ten other cases during the past three years; the instrument was worn, however, a less period of time than in the cases reported. I have seen no symptoms of a serious nature arise in any one case, but the almost universal testimony of my patients has been, that the only evidence they have of the presence of the instrument is the radical improvement in their general health, and the absence of all those distressing symptoms with which they had been so long tormented.

133 4TH AVENUE.

Ossification of the Humors of the Eye. By G. CECCARINI, M.D., New York.

(Read before the Medico-Chirurgical College, November 15, 1860.)

The pathological affection I am about to speak of, although not very rare, still deserves, I think, to be reported on account of the conditions under which it was present. The case was as follows: A young girl, 16 years old, born at New Hamburg, Dutchess County, N. Y., when two years old, fell down, having a pair of scissors in her hand, one of the blades of which entered the right eye, seriously wounding it. I do not know the extent of the lesion, or what portions of the eye were affected by the wound. All the information I

could get from her parents merely went to show that after the accident the eye became very red, very much inflamed, very painful; that this condition continued several months, and that when the inflammation subsided the eye had diminished in size.

These data led me to the opinion that the blade of the scissors, in penetrating the eye, had passed through the membranes and the humors *en masse*, and that the case was one of atrophy of the eye, the result of intense inflammation. I then saw the young patient, and the following was the result of my examination:

The eye was of an irregular form, flat from before, behind, and about half its normal size. The conjunctiva was healthy; the cornea opaque, flattened, and contracted; the sclerotica, diminished in volume, was hard to the touch; iris discolored; pupil obliterated. Pressure upon the eye by the finger caused much suffering. Exposure to cold air produced inflammation in the atrophied eye, which also affected the healthy eye.

The design of the parents in consulting me was to prepare the orbit for the application of an artificial eye. Under the conditions which I have just related, it was impossible for me to employ the usual process, and I therefore intimated to the parents the necessity of extracting the atrophied eye, in order to save the sight of the healthy organ, and I promised at the same time to perform the operation in such a manner that the application of an artificial eye would be easier, and without disturbance.

The 10th October last, assisted by my friends Drs. Meier and Lalane, I operated upon the young patient. After having placed her under the influence of chloroform, I performed the operation in the following manner:

The patient was lying upon her back, her head resting upon a firm pillow. I separated the eyelids with the elevators to their full extent, on account of the depression of the globe in the orbit. I then pierced the cornea through and through, a half line from the sclerotica, by means of a curved lance-shaped needle, furnished with a thread. Difficulties were encountered in this first movement, from the resistance of the cornea. When the thread had been drawn through the cornea, I twisted the ends together with my fingers, and waited a few moments before commencing the process necessary for the removal of the cornea, so as to permit the aqueous tumor to discharge itself slowly through the lips of the small incision made by the needle. At the end of a minute I passed the point of the staphylatome through the periphery of the cornea, and carried the blade of the instrument horizontally to the

opposite point; giving to the instrument a to-and-fro movement, I detached the cornea thoroughly.

Not a drop of the vitreous humor, nor of blood, escaped from the opening. A stylet introduced into the interior of the eye, in search of the crystalline lens, revealed to me the fact that the place of the fluids of the organ was occupied by a hard and round body. Trials made with forceps for extracting this morbid product failed. I then made an incision on each side of the sclerotica, of a line in length, a little above the direction of the rectus externus and internus muscles, and was enabled by these two little incisions to extract the pathological product. The hæmorrhage, which was very slight, was soon arrested by compresses of cold water.

Half an hour after the operation the young patient complained of a very severe pain about the orbit of the eye, which yielded to a few drops of Magendie's solution of morphine. The following days there was slight fever, and considerable swelling of the eyelids. Compresses of cold water, renewed from time to time, comprised the only local treatment, and the patient was put upon low diet.

The seventh day after the operation she no longer suffered, and I permitted her to rise, and remain sitting in her room. The ocular stump diminished with the progress of the cicatrization, and took on a spherical form perfectly fitted to receive the artificial eye, and give to it the different movements.

In speaking of this simple operation, it is not my intention to advance it as a new one. Far from that. My only idea has been to prove by the aid of another case, that we should hesitate to remove the entire eye in staphyloma of the iris, or of the cornea, and that the method of M. Bonnet, of Lyons, should be reserved for those cases in which the eye is affected with cancer, or other malignant disease.

The pathological specimen which I show you is, in my opinion, very important. It consists of an ossific deposit found upon the eye of a young girl, 16 years old. Examples of this affection are reported by Scarpa, Morgagni, Morand, Haller, Wardrop, Rognetta, Panizza, Desmarres, Pellier, and Cloquet. Not one of these physicians has observed the same morbid product in early life; all their examples which have been reported were found in patients who were over forty years old.

The most important point in this case is to ascertain in which tissue this ossification has taken place. The piece measures four lines in diameter, transversely, and three lines in depth, being about the size of a small cherry.

My own microscopic examination has not permitted me to decide which tissue was the point of departure for this product; whether the lens, or its capsule, the choroid coat, or the retina. In consulting different authors, I have not met an analogous case. Pellier is the only writer who reports a case which has any analogy to the piece I submit to you, and he says that the substance was the result of the ossification of the whole of the contents of the eye.

A New Cranial Perforator. [At the last meeting of the New York Academy of Medicine, a new Cranial Perforator was presented by T. Gaillard Thomas, M.D., Secretary of the Academy, with the following remarks.]

Since the period at which the operation of craniotomy was first established for the relief of dystocia, a large number of instruments have been invented for the performance of both its parts—perforation and extraction. In connection with those intended for the former, it is my intention to occupy for a few moments the attention of the Academy this evening.

In ancient times quite a variety of perforators were employed, into a lengthy history of which it will be altogether unprofitable to enter at the present moment. Avicenna employed instruments which, at the same time that they perforated, served as crotchets; and Mauriceau followed his example, the *tire-tête* of the latter being too well known to require more than a mention. Levret, Dionis, Fried, and others, made use of instruments which were guarded, and Sir Fielding Ould, at a still later period, invented one called the "Terebra Occulta," which consisted of a species of sheath containing a knife which could be projected at will. By some, a simple bistoury or ordinary surgical knife has been employed; by others, a plain spear of steel with a head like that of an arrow; while others preferred a species of scissors, the cutting edges of which were on their outer borders.

But as my intention is not to give a history of this instrument, I will pursue the subject no further. It will be sufficient, to give some idea of the great variety of perforators at various times introduced, to state that in the thesis of a young Frenchman, who wrote in the year 1832, sixty were mentioned. How many have since been added to the list we will not stop to inquire, but will at once proceed to those most recently invented and most commonly used at the present day.

Beyond all comparison, the perforator known as Smellie's scissors

is more commonly employed than any other. This instrument, too well known to require a description, has been modified in various ways. By Denman, the shoulders were altered and the inner edges of the blades made dull; by Naegle the joint was so changed that the blades could be separated by compressing the handles; by Davis, the entire shape of the instrument was altered, while the principle of action of Naegle's instrument was preserved, and many minor modifications have at various times been suggested by others.

The majority of physicians have never employed any other than one of these varieties.

Recently, M. Hyppolite Blot, of Paris, has invented an instrument acting upon precisely the same principle as the scissors of Smellie, but consisting of two discs of steel, shaped like arrow-heads, which being introduced, lying one on the other, are separated at will, and thus cut with the outer edges, which are sharp.

In Germany, a species of guarded trephine is, as I am informed by Dr. Noeggebath, commonly employed. Upon theoretical grounds, I should suppose that it would not act, but Dr. Noeggebath tells me that it is both speedy and facile of application.

Although Smellie's scissors answer the purpose for which they were intended, they are by no means perfect, and really it is surprising that they should have so long held precedence over all other varieties. I do not express surprise that they are preferred to all others now before the profession, for they are really as good as, or better than, any of their competitors; but it is astonishing that so many efforts should have left us so much to desire in an instrument of such importance to the obstetrician and his patients. It is with an earnest hope that some of the dangers and inconveniences attaching to them may be avoided, that I have been induced to bring forward a new instrument at this time.

The chief objections to Smellie's scissors are these:

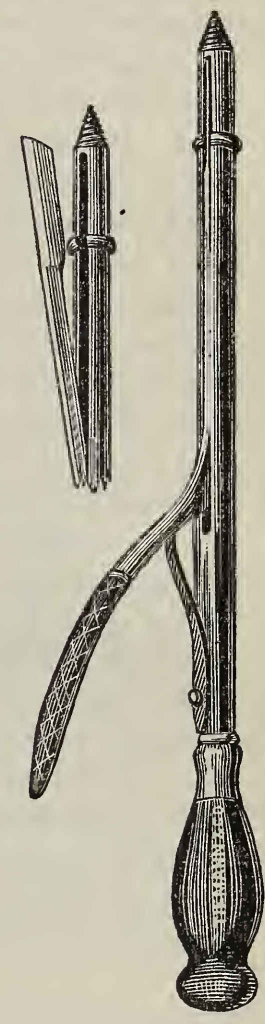
1st. It is difficult to penetrate the bones of the skull when much ossified; sometimes, almost impossible.

2d. In forcing them against the round head, they are very apt to slip and cut the mother.

3d. The operator cannot open them himself, and has to trust this to an assistant, one of his hands holding one shank and the other guarding the points.

4th. As the outer edge of each blade is cutting, it is difficult to guard both at the same moment, and sometimes jerking rapidly through the tissues, the os is wounded.

The instrument which I now show (see cut) consists of a steel or iron tube, ten inches long, which ends in a screw, and hides within itself a cutting blade which is thrown out of its bed by the hand of the operator compressing the handles. Two inches from the extremity a shoulder is placed, which prevents its entering the head too far, and the blade is fixed upon its pivot by a slot, which renders its removal easy for cleansing the instrument. It is hoped that this instrument will possess these advantages:



1st. There is no difficulty of introduction, for the screw, being a double one, catches readily in the scalp and penetrates the skull with the same ease, and by the same force which would cause a gimlet to enter wood, or the screw of a ramrod to engage the wadding of a gun.

2d. It will not slip, for it is not pressed against the skull at all, but is wormed in by the process of boring.

3d. The operator himself throwing out the blade, he can regulate its progress and thus prevent its cutting the surrounding parts; an advantage, however, possessed by Naegle's instrument.

4th. There is only one cutting edge, and consequently, this is easily guarded, the attention of the operator not being distracted by one on the other side acting in a different direction. Two or three essays have convinced me that the instrument will penetrate the skull with great facility, certainty, and safety for the mother.

In presenting it to the Academy, I wish to be distinctly understood as in no wise entering a plea for a more frequent resort to craniotomy, an operation which must diminish in frequency of performance *pari passu* with the advance of the obstetric art. But if (as no one will deny) this sad operation must in some cases be done, it were better that it were well done.

Any instrument, from Smellie's scissors to an ordinary pocket-knife, will answer for its performance in the hands of an adept; it should, however, be remembered, that instruments should not be framed to suit adepts, but mal-adroit and inexperienced operators. Nor should they be constructed to aid in giving brilliancy to the operation of the

skillful surgeon; they should, as far as possible, protect the tyro from the misfortune of doing injury by reason of his incapacity or inexperience, and his patient from suffering at his hands.

So many trifling and insignificant modifications of the various instruments employed by the obstetric surgeon have been made of late years, that a prejudice against further change seems to have sprung up in the minds of many practitioners, who, when improvements are suggested, are inclined to quote such hackneyed phrases as these: "One instrument answers as well as another;" "an ordinary jack-knife will do as well as anything else;" "it is not the instrument, but the hand which uses it, which insures success;" and many others to the same effect. But what can be more thoroughly opposed to progress than such views? What can be more culpable than for those having human life in their keeping to frown upon advances in the implements, which not only they, but many who have just graduated, many who unfortunately are very ignorant, and many who have never before operated, have to employ; and this too in an age when the rifle and other implements of war, the machines used in agriculture and in housewifery, in fact all those employed in civilized life, are engaging the studious attention of thousands of ingenious mechanicians? No one will deny that the speculum of Sims, the forceps of Elliot, and the lever of Gardner are great improvements upon those employed twenty years ago; and all will admit that however skillful the hand, however capable the operation, the inconvenience, suffering and danger resulting from their use will be much less than if older instruments were still adhered to.

Finally, let me call attention to the fact, that although the steps of the operation of craniotomy are simple, its mortality is very great; according to Dr. Fleetwood Churchill, one in five mothers perishing, and of course all the children being sacrificed; surely whatever may diminish one tithe of this mortality is well worth the careful study of the medical profession.

Chlorate of Potash in Phthisis.—Notes of three Cases treated with Chlorate of Potash in the Buffalo General Hospital, by C. C. F. Gay, M.D., Attending Physician. Reported by J. A. Peters, Medical Student.

Much discussion having been elicited lately by Dr. Fountain's proposed treatment of pulmonary consumption with chlorate of potassa, the following notes of three cases, treated in the Buffalo General Hospital, are submitted, in the hope that they may be of some use in determining the value of the remedy. It may be objected by the friends of the treatment, and with truth, that the trial has not been sufficient to disprove its value; but the standing of any remedy is only fixed by the comparison of its effects in many cases, in the hands of different practitioners, and it is to assist in this comparison that these cases are reported.

Case I.—Thomas Kay, laborer, English, æt. 21, unmarried, habits intemperate, came in June 17th, has had a cough nearly two months. Symptoms indicate well-marked tuberculosis, emaciation great. The treatment adopted at first was the usual course of anodynes, cod-liver oil, and tonics, under which he continued in much the same condition until July 16th, when nausea and diarrhœa made their appearance; these were treated by appropriate remedies.

21st. Night-sweats. ℞.—Acid. sulph. arom., gtt. x., every night.

From this time, he continued improving until Aug. 1st, when all treatment was stopped, except a prescription which he had been taking for some days past to correct nausea. He continued much the same, his appetite being small, and diarrhœa, with some nausea, being present until September 6th, when his tongue presented a very bad appearance, being covered with white aphthous patches, and ragged at the edges. On the 8th of September all previous treatment was stopped, and potass. chlor. was ordered, ℥ss. to be drank, dissolved in water, in 24 hours.

9th. Whiskey was resumed.

10th. Secretion of urine increased, much cough and expectoration of blood.

18th. Increased pot. chlor. to ʒvj., daily.

22d. Tongue better; edges still sore.

26th. Vomits potash; and on the 29th the potash was discontinued. During this time, his diarrhœa had been increased rather than diminished, and was immediately checked on stopping the potash. Nausea had continued, and seemed to have direct reference to the potash, since,

although that medicine was well borne at first, after two or three weeks of its use he could scarcely bear the sight of it.

CASE II.—John J. Cross, æt. 29, English, unmarried, formerly a butcher, but now an hostler, previous health good, taken five weeks since with chill and fever, followed by pain in side. In this case, the great emaciation and general appearance of the patient were such as to warrant the diagnosis of phthisis, which was further confirmed by physical exploration. Pulse 120 at the time, and has continued frequent ever since. He was ordered the following prescription on the 22d:

℞.—Potass. chlor., . . . ℥ss.
Aquæ, ... Oj.

To be drank in 24 hours.

24th. Could not sleep; appetite better; cough and expectoration slight. 25th. Has diarrhœa; gin ordered.

26th. Cough worse; diarrhœa continues. 28th. Diarrhœa still present. Condition generally anæmic.

℞.—Sulph. quininæ.

Oct. 3d. No better. Discontinued potash, which caused great nausea and loathing.

The diarrhœa in this case seemed to abate as soon as the pot. chlor. was stopped. This patient took the remedy well at first, and seemed to like it, but soon "loathed even the sight of it," as he said, and could not take it.

In the third case the remedy was ordered, the general symptoms seeming to warrant its use, although there were no strongly marked indications of tuberculosis. It is merely mentioned as illustrating the same effect which seemed to proceed, in the other cases, from the use of this remedy, viz., nausea and diarrhœa.

In neither of the above cases was any good effect perceptible; but on the contrary, the appetite was diminished, the diarrhœa and anæmia exacerbated, and nausea produced or increased. At first the patients were pleased to have a simple pleasant drink ordered, but this soon gave way to an intense disgust, and inability to swallow the medicine.

Whatever efficacy the remedy had in the hands of Dr. Fountain, it has served no good purpose, and its use has been abandoned, in this Hospital.

MONTHLY SUMMARY OF MEDICAL JOURNALISM.

By O. C. Gibbs, M.D., Frewsburg, N. Y.

Lead Poisoning from Water Conveyed in Lead Pipes.—In the *Boston Medical and Surgical Journal* for September 20th, Dr. J. R. Nichols has an article upon the above subject. It is true that water conveyed in some lead pipes seems harmless, and from others proves poisonous. Upon this point, Dr. Nichols observes, "I have noticed in the leaden pipes removed from cesspools, sinks, and wells, that the intensity of corrosive action had been in a great measure confined to the sharpest bends and depressions in the pipe, and in some instances, other portions remained intact." . . . "It is obvious, if these observations and conclusions are correct, that much care should be exercised in placing pipes in position, in buildings. In those leading to the culinary department, angles and depressions should be avoided. Violent twists and turns should not be permitted; and during the erection of houses, the open ends of protruding pipes should be carefully closed."

Whiskey in Tetanus.—In the *Louisville Medical News*, for September, 1860, Dr. A. B. Cook has an article upon the treatment of *tetanus*. He reports a case treated with whiskey, in which the results were perfectly satisfactory. The usual treatment was pursued for a time, with no improvement. Two ounces of whiskey were then ordered to be given every two hours, and the symptoms abated, and in due time the patient recovered.

Dr. Cook says, "From the evident good effects of the whiskey in this case, I would administer it with more hope of success than any other remedy with the result of which I am at present acquainted."

Treatment of Whooping-Cough.—In the *Louisville Medical News*, for September, J. W. Benson, M.D., has the following upon the treatment of whooping-cough: "Fifteen years have passed since we heard the justly distinguished Dr. Valentine Mott state that the following was the best palliative for whooping-cough which he had ever seen used, and fifteen years of experience induces us to say that it is the best which we have ever used; and with blisters to the nape of the neck, and the hypodermic injection of atropine, etc., before our eyes, we still adhere to it with undiminished confidence:

℞.—Acid. Hydrocyan, . . .	gtt. vj.	
Ext. Belladonnæ, ...	grs. ij.	
Tinc. Opii. Camph., ...	ʒiij.	
Syr. Bals. Tolu., ...	℥j.	
Aq. Font., ...	℥iij.	Mix.

One tea-spoonful to be taken four times daily, and also in the nightly paroxysms."

In the August number of the *American Journal of Medical Sciences*, for 1839, Dr. Jackson, then of Northumberland, published a paper upon the use of belladonna in whooping-cough. In the same journal, for October, 1852, Dr. Hiram Corson has a paper upon the same subject. For several years past we have used belladonna in whooping-cough, and with results quite satisfactory. It is probable that the belladonna is the more efficient agent in the formula given above. It is our opinion that the efficacy of the mixture would be increased by enlarging the dose of this agent. A tea-spoonful of the mixture gives only

one-eighteenth of a grain of the extract of belladonna. To get the full benefit of the belladonna for a child one year old, the dose should be about one-eighth of a grain.

Cimicifuga in Rheumatism.—In the *Pacific Medical and Surgical Journal* for August, Dr. H. H. Toland has an article upon the complications of scarlatina, in which the following language occurs: "The tinct. aconite rad. was expected to allay pain, and control fever; besides, it is one of the most useful remedies known to the profession, *except* the *ext. of actea racemosa*, which exerts a more decided influence over every variety of rheumatic inflammation than any remedy I have ever administered, and will often disappoint even those who entertain the most favorable opinion of its efficacy."

We have been greatly pleased with the effects of the cimicifuga in rheumatic, as well as in catarrhal affections, and quote the above remark the more willingly because we believe the remedy is too much neglected.

Dislocation Treated by Wiring.—In the *Kansas City Medical and Surgical Review* for September, Prof. J. T. Hodgen reports a case of dislocation of the scapular end of the clavicle, which resisted every means for its retention in place, until wiring was resorted to, as is done in some cases of fractures. Twelve strands of fine iron wire were twisted together, forming a cord as large as a "*crow-quill.*" Holes were made in the acromion and clavicle, and the dislocated bones firmly wired together. No further trouble was experienced, and in twenty-five days the wire was removed.

Prof. Hodgen says, "I claim that in those dislocations of either extremity of the clavicle in which complete disruption of all the connections has occurred, and in which the bones are widely separated, the method adopted in the case reported is that which best answers the two important indications; *i. e.*, it keeps the parts accurately in proper position, and insures sufficient plastic exudation to unite them firmly, and thus insures good results in cases where failure would almost necessarily attend the ordinary methods of treatment."

Wood Naphtha in Diarrhœa.—In a paper by Dr. G. P. Hachenberg, in the *Cincinnati Medical and Surgical News* for September, the following remark is made in regard to treating diarrhœa: "After using for the last ten years *wood naphtha*, I am almost tempted to consider it the *ne plus ultra* remedy in infantile diarrhœa. I would just as soon be without quinine in treating intermittent fever, as to be without this medicine in treating diarrhœa. I have had many of my medical friends use it, and with the greatest satisfaction."

Though we have never used wood naphtha for diarrhœa, we have no doubt of its utility. In infantile diarrhœa we have never found anything to answer our purpose as well as *creosote*, rendered soluble by the addition of a little tinc. camphor, and given in some aromatic or astringent syrup. Wood naphtha resembles creosote, is composed of the same elements, with the difference that the relative proportions are slightly varied; both are obtained by the destructive distillation of wood, and if the wood naphtha is impure it contains more or less creosote. It is probable that *petroleum* might be found to have similar control over some forms of diarrhœa.

Electricity in Nervous Tremors.—At St. Vincent's Hospital, and under the charge of Dr. Wm. O'Meagher, (as per report in the *American Medical Times*, for October 27th,) a case of nervous tremor was successfully treated with electricity. The report says of the patient that "he was attacked with a universal

nervous tremor about four years previously, after having undergone considerable hardship and taken cold." The tremors were of such a character that, on sitting down, "he would make every article in the room vibrate in answer to his own involuntary movements." For four years he had been under treatment, without beneficial results. Dr. O'Meagher, despairing of the efficacy of drugs, had him electrified every other day. The improvement, under this treatment, was prompt and decided—the tremors gradually subsided, the bowels became regular, and sleep good—the appetite became good, and the patient improved in flesh and strength. The improvement was so rapid, that a disease of four years' standing yielded in two weeks, so that the patient went home rejoicing, with scarcely a vestige of his disease remaining.

Diphtheria.—Before the Cincinnati Academy of Medicine, the subject of diphtheria came up for discussion. (See *Cincinnati Medical and Surgical News.)* The *chlorate of potash* was a favorite remedy with most of those who had had experience with the disease. We quote one remark bearing upon prognosis. Dr. Murphy says, that "when there is an issuing of the plastic matter from the nostrils of the patient, the disease always terminates fatally!"

Premature Extraction of Deciduous Teeth.—In the country physicians are often compelled by necessity to do duty as dentists. This fact must be our apology for an occasional reference to dental subjects, for it is important that whatever we, as physicians, have to do, we do well. In the *Dental Cosmos* for September, Dr. J. D. White has an article upon the premature extraction of the deciduous teeth. It is a general impression among the people that the tooth of a child should be extracted as soon as it is in the least degree loose. This opinion is too often seconded by the dentist or physician, to the injury of the regularity and beauty of the permanent set. But we will let Dr. White, who is the more competent, speak for himself. "The object of the present article is to protest against a practice which we hoped had died out, especially among those who have been appointed to teach the science of our art. We allude especially to the *premature extraction of the deciduous teeth, to give the permanent lateral incisors room.* We never knew a case where such operation was necessary, nor do we believe it ever exists. The absorption of the deciduous canine root has seldom commenced at the period of eruption of the permanent lateral incisors, the difference between their periods of eruption being from three to four years. When a deciduous tooth is extracted the part ceases to grow, with the disadvantage, we believe, also, of *atrophia* of the part, as a consequence. But, apart from the contraction which takes place, and causes the permanent laterals to approach the anterior deciduous molars, they fall backward in the arch, so that when they have grown long enough to meet the lower teeth, they are inside of them."

Radical Cure of Hernia.—In the *American Medical Times* for August 25th, Dr. J. W. Riggs has an article on the radical cure of hernia. It is probably known to most of our readers that Dr. Riggs invented a new truss three years since, which, we believe, has found favor with the profession, and that about two years since, he invented a new instrument for the radical-cure treatment of hernia. Dr. Riggs' faith in success, from operative procedure, is shown by the following extract: "Though we shall make no attempt to demonstrate, as before stated, to *what extent* the cure of hernia by our method is practicable, we must, with due deference, assume that in a certain ratio yet undetermined, *it is curable* by the plan proposed; and we must, moreover, be al-

lowed the expression of convictions which are irresistible, that, with the necessary precautions, aided also by such facts as have been furnished by past experience, the per centage of radical cures *may*, and we believe, *must and will*, be so very largely increased as that the treatment advocated will commend itself to favor with the profession."

Dr. Riggs does not give in the paper before us the peculiarities of his method of treatment; they are stated in an article published more than two years since, which article has not fallen under our observation. The plan of operation first proposed by Wurtzer, is that most practiced by surgeons at present. Dr. Riggs thus states the advantages of his method over that of Wurtzer: "By the plan we advocate, the parts are simply pierced by the instrument, and the *inguinal canal alone* is subject to the action of the foreign body then introduced for a space of time varying ordinarily from one to two days, (though sometimes longer,) according to the circumstances of the case and the views of different operators. By Wurtzer's plan, it will be observed, the same parts are in like manner not only pierced, but the needle or stiletto is kept '*in situ*,' and the tegumentary as well as subjacent tissues, including a large portion of the scrotum, are clamped, and rigidly bound in a restrained and very uncomfortable position for several days, which cannot fail to aggravate the suffering of the patient, and if it do not also *increase* to some extent the danger of peritonitis, it certainly cannot diminish it."

Osteo-Sarcoma of the Lower Jaw, and Remarks in regard to Proper Operative Procedures for the same.—In the *Lancet and Observer* for October, Prof. G. C. Blackman reports a case of successful removal of a very large osteo-sarcomatous tumor of the lower jaw. The bone of the jaw was removed to the articulation on one side, and to the angle on the other. Bleeding was mainly controlled by the free application of the *persulphate of iron*. Prof. Blackman makes some practical remarks in regard to this case that are eminently deserving a place in our *Summary*. He says: "In the first place, ought not the surgeon, before attempting the removal of so large a tumor of the lower jaw, to ligate the primitive carotid artery? In support of this practice, as is well known, we have the high authority of Dr. Valentine Mott, whose name is so honorably associated with the early history of these operations for osteo-sarcoma."

Prof. Mott has reported three operations of this character, in which the primitive carotid was tied prior to the removal of the tumor, with but one death. Prof. Blackman regards this preliminary operation as unnecessary, and as one calculated rather to enhance the danger. Of his own experience he says, "Altogether, we have had *five* cases of disarticulation of the lower jaw, a number equal to that of any European, and exceeding that of any American surgeon mentioned in Velpeau's statistics, op. cit., p. 339, Vol. ii. In these, and in five others in which we have removed the body of the bone, we have never tied the carotid artery as a preliminary step. Our only fatal case is that where we removed the entire bone; and we believe the numerous physicians who witnessed that operation attributed, with myself, the death to the conjoined depressing influences of chloroform and intense heat, the thermometer ranging during the greater part of the day at 100° Fah."

Mr. Crisp, of London, has reported 21 cases in which the carotid was tied, of which 11 proved fatal. Dr. Norris, of Philadelphia, (see *American Journal of*

Medical Sciences, July, 1847,) has collected 149 cases of this operation, of which 32 were fatal. Supposing Dr. Norris' cases not to embrace those of Mr. Crisp, we have 170 cases and 43 deaths—a mortality a trifle greater than one in *four!* This mortality, following the operation of tying the carotid alone, is greater than that given by Prof. Blackman as following the removal of the jaw!

Prof. Blackman's figures differ a little from those we have given. He says, "Here, then, we have one death in four and seven-tenths cases, from an operation recommended to us by the very highest authority, as a *precautionary* step in the removal of tumors of the lower jaw. The mortality is about equal to that from the latter operation itself—one in four of one hundred and sixty cases collected by Velpeau." Prof. Blackman says he expects in a few days to operate on another very bad case of osteo-sarcoma of the jaw, and remarks, "We have no idea of applying a ligature to the primitive carotid; compression, persulphate of iron, and ligatures to divided vessels, are all the means which we expect to employ to guard against hæmorrhage."

A New Needle for Sutures.—In the *Nashville Journal of Medicine and Surgery*, for October, Dr. Paul F. Eve figures and describes a new suture needle. It is designed for the use of metallic ligatures, and, when armed, one end of the ligature projects near the point of the instrument. "It is slightly curved and has a lancet-like point and shoulders, to facilitate its passage through the soft parts," and is mounted on a fixed handle, thus giving the operator full control over it. "The novelty of its construction is the *canula* at the curvature through which the ligature, metallic or otherwise, is passed." Dr. Eve has three sizes made.

Vesico-Vaginal Fistula.—In the *Nashville Journal of Medicine and Surgery*, for October, Dr. W. T. Briggs reports a case of vesico-vaginal fistula of considerable size, which was cured by operative procedure. Two operations were necessary to effect a cure. He says, "After full consultation with Professors Eve, Bowling and Watson, I determined to leave the cervix uteri in the opening as it was, and to attempt to unite the vaginal with the uterine lip of the fistula, thus throwing the os uteri into the cavity of the bladder." After her recovery the patient menstruated entirely through the *bladder*. Dr. Briggs says, the greatest difficulty which he experienced in this, as in all similar operations, was in passing the sutures. He thinks this difficulty will now be entirely overcome by the use of the canulated needle, invented by Professor Eve, and alluded to above.

On the Influence of Menstruation and Pregnancy on the Quality of the Milk of the Human Female.—In the *Chicago Medical Examiner*, for October, Prof. N. S. Davis has an article upon the above subject. We give a conclusion or two, without quoting the facts from which those conclusions are deduced. Prof. Davis says, "From all the foregoing facts and analyses, I am led to infer that the occurrence of pregnancy during the ordinary period of lactation, either speedily reduces the quantity of milk secreted, or lessens the proportion of solid or nutritive constituents to such a degree as to render it insufficient for the proper nourishment of a child over six months old. In a small proportion of cases, however, the milk secreted continues abundant and of good quality, but the health of the mother rapidly declines; while in a still smaller proportion of cases, the mother and child both continue well nourished and healthy."

In regard to the composition of healthy human milk he says, "If we compare the results obtained by me with those just given, we may deduce the following table, which will probably afford as reliably a representation of the average composition of healthy human milk as can be obtained:

Water	885.50
Solid matter	114.50
Of which there is:	
Butter	29.70
Sugar and Extractive	43.35
Caseine	38.27
Salts	7.20

In regard to artificial food for young children, Prof. Davis says: "During the last three or four years I have regulated the food of infants coming under my care in accordance with the foregoing propositions, and with the most satisfactory results. The solidified milk, manufactured in Dutchess County, New York, contains just about the required amount of additional soda and sugar, and when dissolved in the right proportion of water, makes the best food that I have yet used for infants deprived of the mother's milk. I have now, within my circle of patients, three infants, growing finely on the solidified milk exclusively, and have been, since they were from three to six weeks old." In cities, we have no doubt this last suggestion is of the first importance. Practicing in the country, we have seen many children brought up by hand; and these same have flourished finely. For young children denied the breast, we have generally directed new cow's milk, reduced one-half with water; to this a little sweet cream has been added, and also a little pure sugar. All artificial food should be given from a bottle—"*suction being the only proper mode of feeding for a young child.*"

Ordinary city milk is entirely inadequate to the healthy nourishment of young children.

Stramonium in Neuralgia.—In the *Chicago Medical Examiner*, for October, Dr. A. Young has an article upon this subject. The author says of neuralgia: "I have to meet with the first instance that has failed to yield to stramonium." "The mode in which I have given it in the intermittent form, is gr. j. of Tilden's Ext. Stramon. Fol., every two or three hours during the intermission, until the system is decidedly affected, indicated by dilated pupil, disordered vision, vertigo, and often hallucinations, or mild delirium. When given to this extent, it will generally be found unnecessary to repeat it. Anything less than this will be of comparatively little value."

Opium in Inflammation.—In the *Chicago Medical Journal* for October, Dr. L. S. Ellis has an interesting paper upon the *nervous agency in inflammatory action*. We have not space for an analysis of his opinions in full, and will content ourselves with quoting a few remarks in regard to opium as an antiphlogistic. He says, "Opium stands as the *sine qua non* in the treatment of large and important classes of disease. It has been demonstrated beyond peradventure, by Dr. A. Clark, of New York, that opium alone is sufficient, if timely administered, to control the severest cases of puerperal peritonitis. General peritonitis yields equally surely to its influence. Inflammation of the pleura, in its incipient stage, more especially, yields to the magic influence of opium. I believe that it only wants a clear head and brave heart to show that

it would have a like influence, if timely administered, in inflammations of the meninges of the brain."

Veratrum Viride.—Before the *Lancaster City and County Medical Society* this agent came in for its share of attention. We quote from the *Reporter* for October 6th. Dr. John L. Atlee, Sen., spoke highly of it in *puerperal mania*, and concluded by saying, "that he was not aware that the veratrum had been used before in the treatment of puerperal mania; but he wished that his medical brethren would give it a trial, should they have the misfortune to encounter the disease. From its sedative influence upon the heart and nervous system, he thought it might be beneficially used in the treatment of some other forms of mania." Dr. Ziegler remarked that, "in his hands the veratrum viride had received a faithful and extended trial, and he was free to admit that, in the cases in which he had given it, it had proved beneficial beyond his most sanguine expectations. He gave the history of a case of typhoid fever, in which, after almost every conceivable remedy had been employed unavailingly, and the patient seemingly beyond the reach of medicine, Dr. Z. made use of Tilden's preparation of veratrum viride, and succeeded in restoring his patient to health." He also added that "in dysentery he had derived great benefit from its employment."

Dr. Parker remarked, that "on numerous occasions he had employed veratrum viride in puerperal fever, and with nearly uniform success. He acknowledged himself to be an enthusiastic advocate for its use in this disease; in fact, was almost disposed to regard it as a panacea."

Tannin as an Antidote to Strychnine and other Narcotic Poisons.—In the *Medical and Surgical Reporter* for October 6th, Dr. Patze has an article upon the antidotal powers of tannin in strychnine, as well as other vegetable poisonings. We have not space here to reproduce the article, but suffice it to say that Dr. Patze has used tannin in cases of poisoning with strychnine, stramonium, belladonna, &c., and with surprisingly happy results.

In-Growing Nail.—On a former occasion we refered to Dr. Gilman's treatment of this painful trouble. The treatment is by dropping a few drops of melted tallow, and made very hot, upon the diseased part. In the *Medical and Surgical Reporter* for October 13th, Dr. H. M. Clarkson reports a bad case of in-growing nail at once relieved, and soon cured by one application of this simple remedy.

A New Operation for Varicose Veins.—Dr. R. J. Levis, of the Philadelphia Hospital, has of late been treating, very successfully, varicose veins by an operation which, in a private letter to us, he says is *absolutely safe, and always successful.* The operation consists in a *subcutaneous ligation of the varicose veins with silver or iron wire.* The hospital reports, as published in the *Medical and Surgical Reporter*, for several months past, give a history of this operation and its results. With a straight needle the wire is passed beneath the vein, out through the skin on the other side, and returned between the vein and the integument through the original place of entry, thus surrounding the vein. Several ligatures are usually applied in each case, and at the same time. The ligation is made by traction on the wires, and by twisting them.

An Extraordinary Case of Ascites.—On a former occasion we referred to a case of ascites, reported by Dr. S. M. King, in which, in about five and a half years, over 628 gallons of fluid had been removed by tapping. The patient, Mrs. Adams, is still alive, and Dr. King, in the *Reporter* for October 13th, continues

the record of the case. In the last eleven months, she has been tapped eleven times, and had removed about 146 gallons of fluid, making, in the aggregate, over 774 gallons, or 24½ barrels. The patient's health is still tolerably good.

Neuralgia.—In the *Pennsylvania Hospital reports*, (as per *Reporter*, Oct. 13th,) Prof. J. F. Meigs mentions a case of *sciatica* that proved somewhat rebellious. The patient's sufferings were so severe that subcutaneous injections of morphine were frequently, and on several occasions, resorted to. Opium, valerian, iron, iodide of potassium, wine of colchicum, were resorted to in turn, with but little or no improvement. "Todd's anti-neuralgic mixture, which consists of 15 grains of bi-carbonate of potassa, 10 drops of tincture of opium, and 5 grains of nitrate of potassa," was next resorted to, with an occasional subcutaneous injection of morphine, under which the patient steadily improved.

We refer to this case for the purpose of mentioning a fact that we believe not to be sufficiently well understood. In cases of a rheumatic or neuralgic character, of which sciatica is a type, we regard *strychnine* as the all-important remedy. In the last five years we have trusted all such cases to it, and it never has once disappointed us. We have generally commenced with one-twentieth of a grain dose, and increased slightly. Decided improvement will be manifested within a week. Where the paroxysms of pain are severe, as the action of the strychnine is not immediate over pain, opium by the mouth or by subcutaneous injection may be resorted to. The following mixture is a favorite one with us under these circumstances:

℞.—Tinc. aconite,	ʒj.	
Tinc. opium,	ʒvij.	
Tinc. cimicifuga,	f. ℥j.	Mix.

Dose—a tea-spoonful. To be repeated as may be necessary to control the severe pain. In malarious regions quinine may be appropriately associated with the strychnine in mixture. We do that quite often even in non-malarial cases. Neuralgia is generally a disease of the enfeebled.

Diabetes.—In the *Maryland and Virginia Medical Journal*, for August, (which, by the by, has but just come to hand,) Prof. Samuel Chew has an able clinical lecture upon *diabetis mellitus.* We have given this a careful perusal, and regard it as an able and exhaustive essay upon the subject. Instead of indulging in crude and profitless speculations in regard to its nature, the author very frankly says of the primary pathological lesion, "No one knows where it is situated, or what is its nature."

Of treatment, he says, "The means which I have generally found more useful than any others, were proper regulation of the patient's diet, and the use of opiates and diaphoretics." An exclusive diet of animal food, Dover's powder and tonics of iron, he regards as the principal remedial agents. He says it is quite unfortunate that, though under this treatment the patient may improve quite satisfactorily, yet he soon longs for vegetable aliment and loathes his animal food. Under these circumstances, it is almost impossible to enforce the dietetic regulation. Prof. Chew does not allude to the *bran bread*, so highly spoken of by Dr. Camplin, of London, which may be used with the animal food, with less danger of getting up a disgust for the meat diet. Opium is evidently one of the most important agents in the treatment of diabetes, and Dr. Inman, of Liverpool, thinks it is borne in larger doses, and with better effect, when combined with quinine. Iodine, in full doses, has been suggested, and it is doubt-

less worthy a trial in so rebellious a disease. It may not be amiss to observe here that, at the *Hôtel Dieu*, Dr. Aran, who has acquired great celebrity in the treatment of this disease, prescribes for his patients daily the following:

"One ounce of bi-carbonate of soda, to be taken in the drinks; claret, 16 ounces; bark-wine, $3\frac{1}{4}$ ounces; full diet of meat, equivalent to about 24 or 26 ounces of animal food; a vapor-bath, followed by cold affusions; spa-water at meals; four quarts of the usual diet drink."

Passage of a Large Stone by the Urethra.—In the *Maryland and Virginia Medical Journal* for September, Dr. W. M. Turner reports a case in which a child of two years of age passed, with a little aid, a stone of the following dimensions: "Length, five-eighths, and circumference, three-quarters of an inch; weight nearly forty-two grains." It is very unusual that a stone of these dimensions passes per urethra in a person of any age, and much less usual in a child so young. We once aided in the passage of a stone of just about the same size, in a young man of nineteen years.

Pneumonia.—In the *Maryland and Virginia Medical Journal* for October, Prof. F. Donaldson has an article upon the subject of pneumonia and inflammations in general. This is a subject upon which the most opposite opinions are held, and one in regard to which any additional evidence is of interest. Space will permit us to quote only a remark or two, but these will be sufficient to show what opinions the author holds. Bearing upon inflammation, he says: "We noticed a curious fact related by Bernard in one of his recent lectures. He accidentally left three dogs fasting together for three days; their nutrition failed, and each of them had an acute inflammation; one a pneumonia, another a peritonitis, and a third an enteritis." This fact is commended to those who regard inflammation as an evidence of an excess of vitality and vascularity, or sanguinity requiring blood-letting, antimony, &c.

In regard to treatment of pneumonia, he says: "As all cases of pneumonia now-a-days are of a low type, it follows, not only that we must not bleed, but must actually give quinine, which is a stimulant and tonic, (he might have added, under certain circumstances, sedative and diaphoretic,) to support the powers of life, so as to enable them to bear up against the depressing influence of the disease. Consistent, concomitant practice with this, is the administration of animal food in its most digestible form, such as beef-tea; but the digestion is weak, and even fluid animal broth has to undergo digestion. We want an article of food not requiring digestion and very assimilable, and we have it in the shape of alcohol. Todd, Lewes, Marcet, and our distinguished friend, Dr. Wm. A. Hammond, tell us it is food when given at regular intervals, in moderate doses; and we daily meet with poor drunkards who literally live on it. Its power of upholding and sustaining the vital forces, especially that connected with the nervous system, is wonderful; and, moreover, its hydro-carbonaceous nature gives it great heat-making properties, and thus the tissues, and with them the patient's strength, are sustained."

Tobacco, &c.—In the *North Carolina Medical Journal* for August, Dr. J. T. Schaffner has an article of thirty pages upon the use of tobacco. He stands opposed to its use, and concludes his paper thus: "In conclusion, I would say to those—and especially the young—not yet initiated into this habit, never begin. No good can possibly come from it; but, contrarily, as I have striven to prove, harm will. It will injure your health, your integrity, your morals, your

standing in society. You are now free; do not enslave yourselves. Let the habit alone—have nothing to do with it.

"To the moderate consumer, I would say, desist; stop where you are, entirely and forever: you cannot say one word in defence of it. Ask any intelligent consumer to give one valid reason for its use, and he will unhesitatingly confess he cannot do it. It does shorten life, makes you a slave to sensuous habits and appetites, debilitates and ruins you.

"To the habitual and confirmed consumer I appeal, though with little hope of effecting a reform. I know the struggle will be dreadful, but it is hard, because the vice takes away your will. Break asunder, *now*, the chains that bind you; better do it now than never! Happily for every one that tries; he has powerful allies to assist him. Against Tobacco are marshaled Woman; the Constitution of Man; the Voice of Nature; the Hopes of the Race."

In the *Nashville Journal of Medicine and Surgery* for October, Dr. Jerome Cochran has an article in defence of tobacco. He says the question is not whether tobacco in immoderation is injurious, for that is admitted; and the same admission may be made in regard to beef and bread; but "whether the characteristic action of tobacco in ordinary quantities, and under ordinary circumstances, is injurious to the human system?" We quote a passage as a sample of the whole argument, and must refer tobacco lovers and tobacco haters to the articles respectively. "It behooves us to inquire whether, since its (tobacco) discovery, its influence has been for good or evil; whether, since its consumption has become almost universal, the energy of the human race—physical, mental, moral—has suffered diminution; whether the progressive momentum of the nation has been checked; whether universal humanity has suffered any signal humiliation—any pariah degradation fairly traceable to its influence. Call the last three hundred years into the witness box and let them testify. Never before, sir, were the hands of man so busy—never before were man's achievements so brilliant. The last three hundred years—the world's tobacco period, have given us Shakspeare, Milton, Goethe, Bacon, Descartes, Newton, Hamilton, Comte; [the argument is defective, unless it be proven that these were eaters or users of tobacco!] the Inductive Philosophy, the Lutheran Reformation, the French Revolution, the American Republic, the steam-engine, the pile of Volta, the power loom, the electric telegraph. All this has been accomplished under the influence of tobacco; all this has been achieved since tobacco took possession of the world. How then is it possible to believe that tobacco is deleterious to the human race? How then is it possible to believe that tobacco weakens the bodies, paralyzes the intellects, and vitiates the morals of men and women? I tell you the accusation is not true. No sane man with all the facts before him can possibly believe it. Have all the people in the world conspired to tell a falsehood? There is an old maxim that the voice of the people is the voice of God. If this is so, is the united testimony of eight hundred millions of human beings to go for nothing? Is it reasonable to suppose, that in a world like this, six millions of acres of land would be devoted to the production of an article calculated to injure mankind physically, mentally, and morally? that two hundred and fifty millions of dollars are annually squandered in an indulgence that is worse than worthless? that sensible men and women would consume every year five thousand millions of pounds of unadulterated poison? The thing is incredible—an insult to mankind's common sense."

Being a non-user of tobacco, we regard Dr. Cochran's arguments as a little unsound. He thinks that "man's inherent appetites are a true and reliable guide to indicate to him what articles are best calculated to nourish and sustain his physical system!" Does he not know that man has no instinctive appetite for tobacco? The appetite is *entirely artificial*. The argument of Dr. Cochran would hold in favor of the use of alcohol, and the most besotted inebriate might find consolation in the fact that his instinctive appetites and natural cravings were in favor of his indulgences! We must be permitted to say that we regard Dr. Cochran's argument as unsound.

Air-Plug for the Speculum Uteri.—In the *Southern Medical and Surgical Journal*, for October, Prof. H. F. Campbell has an article upon the above subject. It is not always easy to introduce the common glass speculum, neither is its introduction always free from pain to the patient. Prof. Campbell proposes to overcome the difficulty, and to avoid the pain by the use of an air-plug. "This very simple apparatus consists of an elongated India-rubber bag, with a tube of the same material at its posterior end. This tube may be eight or ten inches in length; must have an air-tight stop-cock in the end. The bag is put into the speculum in a flaccid state, protruding a little beyond the uterine end—just enough to produce a somewhat wedge-shaped rotundity when fully blown up. At the point where the end of the speculum would form a ridge, there is a slight elevation or crimp on the bag; so that when the plug is blown up, the edge of the speculum is buried in the India-rubber, and completely protected from coming in contact with the delicate soft parts of the vulva or vagina. The bag, being properly adjusted in the speculum, is now fully distended with air from the mouth of the operator, and the stop-cock closed. The whole instrument is now lubricated with oil and introduced in the usual manner, when the stop-cock may be turned and the air allowed to escape. The bag of course becomes flaccid again, and can easily be removed by pulling on the tube, when the speculum may be adjusted, so as to bring into view the os uteri, and any other parts to be examined." . . . "Most of the glass speculums now in use are shaped *obliquely* at the uterine end; air-plugs made for these will, therefore, require that *crimp* near the fundus of the bag to be made to pass *obliquely* over it, corresponding with the direction of the edge. If the air-plug should come into general use, however, all glass speculums should hereafter be made *without* that obliquity at the uterine end."

Opium in Rheumatism.—In the *Atlanta Medical and Surgical Journal*, for October, Prof. J. G. Westmoreland has the following remark on the use of opium in acute rheumatism: "Opium, it is thought, interferes with the favorable action of quinine in rheumatism, and from my observation of a few cases in which the test was made, I am inclined to concur in the opinion. In cases, however, of great suffering, any counteracting influence that it may have, to the action of the quinine, is overbalanced by the comfort and sleep it insures." We quote the above for the purpose of making the following remark. We are confident that opium is better borne when combined with quinine, and that quinine is borne in full doses best when combined with opium.

Labor with Unruptured Hymen.—In the *Boston Medical and Surgical Journal*, for October 11th, Dr. C. E. Buckingham reports a case of a lady who was twice delivered of a full-grown child, without rupturing the hymen. Before the head of the child, it gradually merged into an extension of the vaginal

walls. Another circumstance worthy of remark in regard to this case during one of the periods of gestation, was the great power of the uterus to retain its contents. Because of uncontrollable vomiting, it was thought best to produce abortion. The uterine sound was passed four inches into the uterus and swept about, at two different times; at one time blood followed, and at the other a gill of water. A sponge-tent was introduced into the cervix uteri and repeated after its expulsion. In addition to these means, the patient took, in four days, " a pint of decoction made from an ounce of cotton-root bark, and four ounces of Tilden's fluid extract of the same drug." Notwithstanding all this, she carried her child for four months longer, and was delivered at full term of a full-grown and healthy child."

Intra-Uterine Dislocation of the Knee-Joint.—In the *Boston Medical and Surgical Journal*, for October 25th, Dr. J. Youmans reports a case of complete dislocation of the left knee, discoverable at birth. He supposes the dislocation to have been intra-uterine, and gives reasons for this opinion. So far as we know, this case is unique. We cannot well see how a knee-joint could be dislocated in the womb by any injury that would not prove extremely injurious to the mother. The fact that it *would not stay replaced*, but "flew back, as with a spring, to its former position," is presumptive evidence that the false position was taken, if not before ossification commenced, at least very early in that process.

White Poplar, or American Aspen.—In the *Journal of Materia Medica*, for October, Prof. C. A. Lee has an article upon the properties of the *populus tremuloides*. He says, " We have good reason for believing that its tonic properties are considerably superior to those of the salix, especially its antiperiodic power, and that there are few indigenous tonics superior to it in a certain class of cases, especially intermittents." . . . . . . "It meets all the indications of the simple bitters." . . . " The resinous decoction of the buds of the *populus balsamifera* is collected in shells in Canada, and exported in considerable quantities to Europe, where it is in much repute as a diuretic and anti-scorbutic. There is scarcely any doubt but that this substance will yet be found to be a useful substitute for the balsam of copaiba and the liquid turpentines. Further experiments, also, with *populin* in intermittents are desirable; we believe it will prove successful in a majority of cases, equal, if not superior to saliciné, and can be manufactured much cheaper."

Prickly Ash.—In the *Journal of Materia Medica*, for October, Prof. C. A. Lee has an article upon the subject of *Xanthoxylum Fraxineum.* He says of it, " Though extensively used in domestic practice, in chronic rheumatism, &c., it has not been as much employed in regular practice as it deserves; for it is unquestionably one of our most actively medicinal plants, as its sensible properties very plainly indicate. As a powerful and permanent stimulant in languid, torpid conditions, especially in patients of a lymphatic, phlegmatic temperament, it deserves high eulogium; proving equal, if not superior to guiacum and megereum." . . . . "It seems to rouse the organic nervous agency in a marked degree, and in consequence, promotes the circulation throughout the whole capillary system; and this effect is not transient like that produced by the more diffusible stimulants, as alcohol and camphor." . . . . . " It is a powerful eliminant, exciting the whole secretory, excretory, glandular system, favoring metamorphic changes in the tissues, and acting as a general depurant.

Syphilitic sores and malignant ulcers speedily assume a more healthy aspect under its internal and external use. In conjunction with alkalies, it is also a useful article in chronic cutaneous diseases and atonic gout; salivation sometimes follows its long-continued use."

MONTHLY SUMMARY OF FOREIGN MEDICAL LITERATURE.

By Dr. L. Elsberg.

V.—SURGERY.

47. *Clinical Report on Rodent Ulcer.* By Jonathan Hutchinson. (Medical Times and Gazette, August 18 and 25; September 1, 8, 15, and 29, 1860.)
48. *On Shock in Military Warfare.* By John Brown, M.D. (Edinburgh Medical Journal, Sept., 1860.)
49. *Remarks on the Treatment of Tetanus.* In "Notes on the Surgery of the Indian Campaign of 1857–58." By John Brown, M.D., Assistant-Surgeon, Bengal Medical Service. (Edinburgh Medical Journal, Sept., 1860.)
50. *On Forcible Dilatation in Fissure of the Anus.* By M. Robert. (Journal de Médecine et de Chirurgie Pratiques, September, 1860.)
51. *On the Influence of Syphilis and its Mercurial Treatment upon Offspring.* By Prof. Faye, &c., &c. (Foreign Journals; *see* Schmidt's Jahrbücher, No. 7, p. 49, 1860.)
52. *Errors in Diagnosis of Constitutional Syphilis.* By Dr. Fr. W. Lorinser. (Wiener Med. Wochenschrift; Froriep's Notizen, I., No. 21, 1860.)
53. *On the Mercurial Nature of Tertiary Syphilis.* By Dr. Jos. Hermann. (Oesterreichische Zeitschrift für prakt. Heilkunde, No. 22, 1860.)
54. *The Treatment of Venereal.* By Dr. Jos. Hermann. ("Die Nachtheile der Mercurialkur." Vienna: Tendler & Co., 8vo; Froriep's Notizen, II., No. 24, 1860.)
55. *The Cataract or Cornea-Knife.* By Dr. H. Kuchler. (Deutsche Klinik, July 7, 1860.)
56. *The Scooping out of Cataract.* By Dr. Ad. Schuft. ("Die Auslöffelung des Staars, Berlin, 1860; Peters. 8vo, pp. 18.)
57. *On the Shortsight (?) of Squinters.* By J. Zachariah Laurence. (Glasgow Medical Journal, April, 1860.)
58. *Ether to Cure Deafness.* By Mlle. Cleret. (All recent French journals.)
59. *On the Division of the Ciliary Muscle in the Treatment of Glaucoma, as compared with Iridectomy.* By Henry Hancock. (London Lancet, Oct. 6, 1860.)

47. Of all the journals published in the English language, the *London Medical Times and Gazette* is the first, and so far the only one, that properly appreciates the present want of the profession in regard to reports of hospital practice, and that supplies that want in an entirely unexceptionable manner. [If we be thought to go a little out of our way to state this fact, our earnest de-

sire to have our own physicians similarly benefited must be our excuse, as to have in any manner contributed in bringing about such a result would be sufficient reward. We therefore respectfully direct attention, more especially the attention of the esteemed editors of our Weeklies, to the leading editorial of the *Times and Gazette's* issue for July 14th, 1860.] Mr. H., who presides over this department, has already presented valuable reports, which he has most recently followed up with a magnificent one on rodent ulcer, including a statistical analysis of forty-two cases. We quote his deductions, or, as the learned reporter himself calls them, "Aphorisms respecting the Rodent Ulcer."

(1.) That there occurs not infrequently on one or other part of the face, a form of ulceration, which is characterized by an indurated edge, and by a tendency to spread to adjacent structures, without regard to difference of tissue; which is very slow in its progress; does not cause much pain; does not induce cachexia, and is never followed by enlarged glands or deposits in the viscera. (*)

(2.) Sections of the indurated edge of this ulcer (or of the portions of new growth which are sometimes produced about it) do not exhibit the cell-structures met with in epithelial or scirrhous cancer, but only those of organizing fibrous tissue.

(3.) This ulcer differs from lupus exedens, in that it never occurs in the young, and never gets well spontaneously, while lupus exedens but rarely begins after the age of thirty, and usually tends after the lapse of time to cicatrize spontaneously. The two, also, further differ in, that lupus has a tuberculated, inflamed border, without any great degree of induration; while the edge of the ulcer in question presents an extremely indurated ridge, without tubercles, and comparatively free from inflammatory congestion.

(4.) The ulcer in question differs from cancer, in that there is but seldom present any tendency to the production of new material; that it never causes the glands to enlarge, nor induces morbid growths in the internal viscera.

(5.) Although it must be freely admitted that this disease is closely allied to cancer, and that, in its inveteracy under treatment, and its tendency, if not removed, to spread deeply and extensively, it well deserves the designation of "locally malignant," yet it is inconvenient in practice to call it "cancer of the skin," since there are other forms of cutaneous cancer, (the epithelial, scirrhous, melanotic, etc.,) essentially different from it, and of a far higher degree of malignancy.

(6.) The term, "a peculiar ulcer occurring in the eyelids," is too vague, and also involves an erroneous statement as to uniformity of location; an objection

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* In making this assertion, I am borne out by all the facts hitherto recorded. Fully acknowledging, however, the near relationship of rodent ulcer to cancer, I have but little doubt that it will now and then so far deviate from its usual course as to affect the glands, and quite anticipate in the future to hear of such a case. Epithelial cancer may be said to almost never affect the internal organs, yet a few cases are on record in which it has done so. Such exceptions, however, only prove the general rule; and just as the epithelial cancer very exceptionally affects the viscera, so will rodent very exceptionally affect the lymphatics. Professor Langenbeck has mentioned to me a case in which he excised a rodent ulcer from the side of a woman's nose, who afterwards remained well for nine years, and was then attacked by cancer of the uterus, followed by secondary growths and death. Such a fact is, however, very different from one in which the cancerous infection should advance, as in other malignant disease, through the lymphatic system, from the original ulcer.

which, also, in addition to what has been stated above, applies to "cancer of the eyelids," since this ulcer is met with on many other parts besides the palpebræ.

(7.) To the designation of Rodent Ulcer given to this disease by Lebert, and adopted in this country by Paget, (see Lectures on Surgical Pathology,) no objection applies, excepting that it is more vague than desirable. Of those in use it is certainly the best, and should the disease become generally recognized by the profession under that name, the vagueness of its meaning will, by custom, soon cease.

(8.) The Rodent Ulcer is most commonly met with between the ages of 50 and 60, and is equally frequent in the two sexes.

(9.) It occurs but very rarely on any other region than the integument of the face, and is most common in the eyelids.

(10.) It is a singular and very significant fact, that no case has yet been recorded in which the rodent ulcer attacked the lower lip, either primarily or by extension, while that part is well known to be a very frequent seat of epithelial cancer.

(11.) The *Diagnosis* of Rodent Ulcer is usually easy. An ulcer with a hard sinuous edge, situated on some part of the skin of the upper two-thirds of the face, of several, or, perhaps, many years' duration, almost painless, and occurring in a middle-aged or elderly person, of fair health, and without enlarged glands—such a sore is almost certain to be of the rodent type.

(12.) The *Prognosis* of Rodent Ulcer varies with the stage of the disease and the treatment it is intended to pursue. If left to itself it will slowly, but surely, advance both in extent and depth, and will probably destroy the patient's life in the course of from ten to twenty-five years, death being eventually produced by the exhaustion consequent on suppuration, hæmorrhages, pain, etc., and very probably aggravated by inability to take sufficient food, owing to the diseased state of the mouth. If the case be seen in an early stage, while complete removal either by knife or escharotics is practicable, a favorable opinion may be given as to the probable non-return of the disease. The younger the patient, the more rapid will be the course of the disease, and *vice versa;* and the younger the patient, the more nearly is the disease allied to cancer, and the more likely to recur after removal.

(13.) The only *Treatment* which the rodent ulcer admits of is local, and the best is that which obtains its freest removal with the least injury to the parts concerned. In some localities, and in some stages, escharotics, such as the chloride of zinc, may be advisable, but in most, excision and transplantation of skin is the more certain and satisfactory.

14. A widely-diffused knowledge of the true pathology of rodent ulcer may be expected to result in considerable advantage to the sufferers from that disease, since it will encourage to the early and free adoption of local measures, and to the employment of excision and transplantation, even in some cases which, if considered cancerous, would certainly be beyond relief by surgical art.

48. The following is quoted from the *Medical and Surgical History of the Crimea*, (Blue Book,) vol. ii., p. 256: "Shortly to recapitulate, the 'shock,' as usually coming under the cognizance of a military surgeon, is of a compound nature, in the composition of which the following elements may often be recognized:

1st. The vital effects following all severe injuries.

2d. The mechanical effects, probably many and various, of the peculiar velocity and momentum of the impinging force, especially in reference to common shot injuries.

3d. Probable additional vital effects of the above-mentioned velocity and momentum.

4th. Nervous depression, consequent on previous high nervous tension.

5th. Loss of blood to a considerable extent, sometimes by a large quantity, suddenly effused, sometimes by a longer process of gradual drain."

In conclusion, Dr. Brown states the following aphorisms:

1st. Shock in military warfare is a state which, except in cases of injury to vital organs, or severe hæmorrhage, does not supervene till some time after the injury.

2nd. In this case the knife should follow the wound if amputation be necessary, as less hæmorrhage occurs, and no additional shock is produced.

3rd. If shock be established, and show no sign of amendment, chloroform may be given, and amputation performed with the *chance* of success.

49. The able paper from which we have extracted both the preceding articles and the present, gained one of the gold medals awarded by the University of Edinburgh. Dr. Brown concludes that the frequent swallowing of medicines is a powerful excitant of the spasms; that little absorption goes on in the stomach; that frequent purging is a doubtful remedy, in view of the intimate connection between the intestines and the spinal cord, irritating substances in the former being by all admitted often to produce convulsive diseases; and that probably the most successful treatment would be by pulmonary inhalation of medicines. Although chloroform inhalation only alleviates the paroxysms of the disease, as I have seen in my own practice in Scotland, yet belladonna, cannabis indica, or opium might prove beneficial, if thus administered. If they did not, we might be sure of one thing—that their failure was not caused by deficient absorption, and we could thus estimate their value more clearly."

50. Sphincterotomy and every division of the fibres of the sphincter are entirely rejected, and unfailing success claimed for an operation, modified from Récamier's, which consists, after chloroforming the patient, in introducing the two index fingers in the anus, and forcibly drawing them apart, to dilate, but not to tear. This operation is very highly recommended as the most simple and humane; exposing to no danger; requiring no dressing; curing most certainly, rapidly, and without relapse.

51. Prof. Faye, of Christiania, has addressed a circular "to the physicians of all countries," in which he recommends attention to the following points:

How many children of syphilitic parents, treated with mercury, are born and remain healthy? how many die, or are successfully treated? Also, in how far is the assertion correct that a mother, who has borne syphilitic children, is subjected, when again pregnant, with the most happy effect upon the health of the child, to mercurial treatment?

Dr. F. urgently requests the brethren throughout the whole world, especially those engaged in private practice, to report their observations on these points. As soon as these are published, or sent to him direct, he will prepare and return the results.

Prof. Hebra publishes Faye's circular in the *Wiener Med. Vrochenschrift*, (11, 12, 1860,) and shows the benefits to science and humanity that will accrue from general compliance with Faye's wishes. After more definitely stating the

questions, he relates ten cases from private practice, in partial answer, from which cases he draws the following conclusions:

(1.) Secondary syphilis may be transferred per coitum upon the female without local affection on the genital organs of the male; and, therefore, still more easily when the remains of syphilis are present on the skin or mucous membrane.

(2.) Syphilis may be latent in the system; it may not be discoverable from any symptom, only be revealed by the syphilitic condition of the offspring.

(3.) On the contrary, also, syphilis may manifestly exist in the father, and yet (*a*) not be transferred upon the mother, nor upon the offspring; (*b*) even if transferred upon the mother, the child may be perfectly healthy; or (*c*) if even the first children are affected, healthy ones may be born afterwards.

(4.) While the usual treatment with mercurials does not insure against either recurrence in the same person or transmission upon offspring, there is no other method of treatment that does; and it must be at present admitted that syphilis can be cured in parents and children, with more certainty and safety with mercury than in any other way.

In presenting Prof. Faye's request to the profession of this country, we earnestly call upon them to report through the various journals all that has any bearing on the subject, as we have stated it in the heading of this article: whether both or only one, and which one, of the parents is syphilitic; the treatment employed in the cases of the parents and of the children; the cases, as far as ascertainable, of healthy children born from syphilitic parents, and especially mothers that underwent no treatment, should all be carefully recorded. We certainly trust that Hebra's fourth proposition may eventually be materially modified.

52. Lorinser submits that when writers on syphilis described the disease, its treatment with mercury had long been practiced already, and that, therefore, the so-called specific sequences of syphilis—induration of the chancre, syphilitic skin-diseases, ulcers of the mucous membrane of nose and throat, serpiginous ulcers, pain in bones and nodes, swellings of glands and iritis—could not, under these circumstances, be scientifically pronounced to bear any positive relation to the disease. He goes on to show that it is absolutely impossible, with the present confused knowledge on the subject, to diagnose secondary syphilis with any degree of certainty, and dwells on the necessity of scientific study of the disease with the absence of even the slightest mercurialism, requiring not only the non-administration of the drug, but the certainty of the absence of mercury from the system by chemical analysis in each individual case, including, when present, its entire removal from the body previous to any observations or treatment of syphilis.

53. The author regards all syphilitic affections of the bones entirely mercurial. He agues, 1. It cannot be proved that syphilis ever caused any disease of bone before the introduction of mercury; 2. There is not a single case known in which pure syphilis, *treated without mercury*, has caused osseous disease; 3. On the contrary, the whole series of so-called syphilitic diseases of the bones occur in laborers at Idria, who have never had syphilis; 4. The bone-diseases, formerly regarded as following Lues' gonorrhoica, have entirely disappeared since the mercurial treatment of gonorrhœa was given up; finally, the clinical observations made at the imperial hospital, Wieden, department for syphilis, have proved

that these supposed tertiary forms of syphilis always occur only after a previous introduction into the system of mercury, whether as medicine or otherwise; that they are curable with anti-mercurial treatment only, as by iodide of potassium, which renders the excretion of mercury with the urine demonstrable; and that post-mortem chemical examinations have indubitably proved the presence of mercury in the liver, kidneys and bones of persons that died of "bone syphilis."

54. Absolute exclusion of all mercurials, externally and internally; simple treatment of the primary forms; and employment of the iodide of potassium or of sodium in the cases in which chemical analysis proves the presence of mercury in the system; these are the main factors of my treatment, which, far from every secret remedy, is based on the combined experience of all physicians, down to the present day, with the unconditional exception of administering mercury.

Chancre frequently requires nothing but cleanliness and application of cold, without cautery; yet in many cases the latter is necessary to destroy the large amount of exudate, on which the induration of the chancre depends. Fungous granulations after chancre, as well as after all other forms, are touched with argent. nitrat. In some cases, rapid reparation and cure of chancre followed the sprinkling of very finely-powdered pumice-stone, starch, &c.

Buboes are treated in the beginning with cold, more frequently with tinct. iodine, sometimes vesicants, or also with compression by means of lead plates. In many cases, when too late for resorption, Vienna paste is employed. After suppuration is established, free incisions are made with the bistouri, canals enlarged, and if the bottom and edges of the wound assume a specific appearance, they are touched with lunar caustic besides.

Broad condylomata frequently disappear after the application of cold sitz-baths; in by far the majority of cases, however, they must be destroyed by argent. nitr. Pointed excrescences are removed with the scissors. Trials with the pulv. frond. sabin. junip. remained without noticeable success. Excoriations on the lips and in the mouth heal with cleanliness and cold water; those on the anus with cold sitz-baths, or occasionally not until glycerine is applied. Ulcers in the throat heal without recourse to caustics, by frequent use of a gargle either of alum, or aqua goulardi, or of a solution of iodide of potassium.

Exanthemata often disappear upon employing the cold douche for some time; sometimes they yield better to lukewarm baths; frequently, too, rubbing in of sulphur ointment, or of sapo viridis, is necessary. The pigment spots generally yielded to washes of a concentrated decoction of frond. sabin. juniperi.

Phimosis requires, according to circumstances, division, but in most cases circumcision of the prepuce. The double object of diagnosis and rapid cure overbalances in such cases the danger of possible infection of the wound with chancre-poison.

Paraphimosis requires reposition, often with incision, often with accompanying circumcision, of the prepuce, as in phimosis.

Gonorrhœa is treated in the first stage only with cold applications and cold bathing of the part; in the second, with injections of tannin or sulphate of zinc, with addition of simple anodyne tinct.: Orchitis exclusively with ice and iodine ointment.

An ointment of sapo virid. with chlorate of soda, followed by a bath, readily destroys and removes pediculi.

Against all the forms of so-called secondary and tertiary syphilis, as serpiginous cutaneous ulcerations, affections of bone, &c., iodide of potassium or of sodium is employed either in aqueous solution, or in pills, to the amount of 10 to 40 grains daily, given in two divided doses. This medication may be aided by daily sweating, for two hours or so, induced by packing in wet sheets and dry covers; according to circumstances, warm baths or cold douches may also be advisable.

The diet is but very seldom restricted to rigorous abstinence: best possible ventilation and cleanliness are never for a moment in any case neglected, and every patient is informed and warned in reference to the easy communicability of the syphilitic poison.

I am perfectly convinced that remedies may in the future be found better than those mentioned for the different forms. I am quite willing to examine any proposed improvement in treatment, and, if it can be done without disadvantage to the patient, practically to try it; but I will never employ anything that is either *à priori*, known to be injurious, or that has not a sufficient and reasonable claim for trial. Without. therefore, opposing new remedies, there are two methods at present in vogue that I shall never inflict on any patient of mine, viz.: 1, syphilization; and 2, the method of inunction recommended by Prof. Sigmund.

55. After speaking of the disproportion between the wound or flap made, and the length and breadth of cutting edge of Beer's and all other knives used in extraction, in cases of cataract, Küchler recommends a knife, better adapted to its object, having a cutting edge six lines long, (he occasionally uses one of eight lines,) and greatest breadth of blade two lines, (six millimeters,) fine point, very slightly convex, sharp edge, blunt, thin back, with the usual five-inch-long handle.

56. The author describes a new operation for cataract, for which he claims superior advantages. It requires for its performance a series of scoops or spoons, which he minutely describes with so carefully executed illustrations that any instrument-maker can doubtless manufacture them thereafter. [Less detailed and unillustrated description on our part would be useless, and the translation of the whole pamphlet inadmissible in this *Summary*. We will with pleasure, however, furnish the drawings and explanations to any one interested.]

57. Laurence insists on the fact that squinting is more than the mere personal disfigurement. "Suppose," says he, "a case of marked convergent squint, affecting primarily the right eye. On directing the patient to close the left eye, and look straight forward with the right one, an accurate examination will show this latter to be more or less *myopic*, but generally remediable by the use of a *convex* lens." To explain this remarkable phenomenon, he advances the opinion that "whilst this paradoxical form of myopia is really due to a lateral compression of the globe between the external and internal recti, the cornea not only becomes more convex than natural, but the whole globe becomes at the same time elongated; the consequence being a myopic condition of the eye of a very complex character, such as will require still further research for its satisfactory elucidation."

He concludes by remarking that, in his opinion, "(with certain exceptions) *all cases of squint should be operated on as early as possible*, lest the defect of vision attending the personal disfigurement be rendered so inveterate as to

baffle the resources of surgery—a result the more likely to accrue from an injudicious use of glasses, goggles, and other artificial appliances of the kind."

58. [The latest French sensation is the cure of deafness by introducing some drops of ether—variously stated from 2 or 3 to 20 or 30—into the ear. Extraordinary cures have, of course, occurred, unnecessary to be detailed here. The ether probably only acts as an irritant, and may in many cases do much harm. If proved sufficiently important, we shall refer to it again.]

59. Mr. Hancock's operation is based on the view that the pathological ophthalmoscopic appearances of the blood-vessels in glaucoma are due mainly to the constriction exercised by the ciliary muscle; and is performed as follows: Introduce a Beer's cataract knife at the outer and lower margin of the cornea, where it joins the sclerotica. The point of the knife is pushed obliquely backward and downward until the fibres of the sclerotica are divided obliquely for rather more than $\frac{1}{8}$ of an inch. By this incision the ciliary muscle is divided.

VI.—GYNECOLOGY AND PÆDIATRICS.

60. *Urticaria from Irritation of the Sexual Organs.* By F. W. VON SCANZONI. (Würzb. Med. Zeitschrft, I., p. 92.)
61. *Cases of Spontaneous Cure of Uterine Polypi.* By M. VELPEAU. (Gazette des Hôpitaux, 33.)
62. *On Fibrous Polypi of the Uterus.* By C. HABIT. (Wiener Zeitsch., III., 12.)
63. *The Congenital and Acquired Diseases of the Lips in Infants.* By Dr. J. B. JACOBI, of Berlin. (Journal für Kinderkrankheiten, XXIV., p. 44.)
64. *On the Prophylactic Treatment in Croupy Diathesis of Children.* By Dr. TH. CLEMENS. (Journal für Kinderkr., XXIV., p. 180.)
65. *On the Pathological Significance of Jaundice in the Newly-Born.* By Dr. A. BRUNNICHE, Physician to the Children's Hospital of Copenhagen. (Journal für Kinderkr., XXIV., p. 193.)
66. *Weissbrod's Pelvimeter.* By A. MERCER ADAM, M.D. (Notes on the Hospitals of Munich, Edinburgh Medical Journal, July, 1860.)
67. *Anatomical Character of Peyer's Glands in Infantile Typhoid.* By Dr. Jos. BIERBAUM. (Der Typhus im Kindlichen Alter, Leipzig, Chr. E. Kollmann, 8vo; Froriep's Notizen, II., No. 23.)

60. The author, in illustration of the influence of the genital organs on the cutaneous system, relates four cases in which leeching of the os uteri induced a more or less extensive eruption of urticaria. His lengthy explanation amounts to this, that he supposes the irritation of the uterine nerves from the leech bites caused an unusual, and as to its exact causation, inexplicable excitement of the circulation; which again, for as inexplicable a reason, produced the acute eruption.

61. In view of several such cases observed in his clinique, Velpeau advises never to hasten an operation, unless very serious flooding, or other dangers to life, render it imperative. The spontaneous cure occurs either by suppurating or by drying and shrinking, and sometimes in a very short time. The polypi more frequently than they entirely disappear, remain in a certain stage of their development, gradually ceasing to cause loss of blood, and occasioning only slight inconvenience.

62. The author reports twenty-one cases. Most of them occurred relatively

late in life, especially about the change. Among the twenty-one there were three virgins; with the exception of these, and three others, all the sufferers had borne children. In most of the cases, the polypi was attached to the posterior wall of the uterine cavity—only five times to the cervix. In size, the polypi varies from that of a hazel-nut to that of a child's head.

The diagnosis was generally easily made out on a vaginal examination.

In fourteen cases, in which the body of the polypus had either almost or entirely left the uterus, the enlarged womb could be felt by external examination, while the internal revealed the foreign body. When the polypus is entirely intra-uterine—which it was four times in the twenty-one—the diagnosis is of course more difficult. Enlargement of the organ—menorrhagia, metrorrhagia, blennorrhagia, and "labor-like" pains—give rise to suspicion, but no certainty. In these cases, mechanical dilatation, by means of the pressed sponge, often leads to certain diagnosis.

Of the twenty-one cases, fourteen were operated, three refused to be, three died before, and in one case the stalk was so thick that the author dared not operate. The operation consisted, eleven times, in excision, (ten times with scissors, and once with *Mikschik's* thimble instrument,) once in torsion, and twice in ligation. Of the patients operated by excision, six were cured, and five died with symptoms of pyæmia. The case in which torsion was practiced was cured. In two cases ligation was successful, in the other two it failed.

To ecrasement and galvano-caustic removal, the author accords no particular advantage, though he has never employed either of these methods.

Everything else that Dr. H. advances is well known.

63. Besides the well-known *hare-lip*, there may be:

(1.) *Too short upper lip.* The author here only confirms the well-known observations of Louis.

(2.) *Mucous Tumors.* This occurs on the inner surface of the *under* lip especially. Mucous tumors are either (*a*) hypertrophy of the mucous follicles; (*b*) thickening of the mucous membrane, and the connective tissue under it; or (*c*) polypoid excrescences. Under ordinary circumstances, the author would not extirpate them until after the second dentition.

(3.) *Hypertrophy of the lips.* This is not very rare, and is usually of a scrofulous nature. Purging and anti-scrofulous treatment is indicated, and if unsuccessful, operation after Paillard with chloroform.

(4.) *Occlusion.* Although Boyer speaks of congenital atresia of the mouth, there is no such case recorded in modern literature. The author never found this imperforate condition except as a pathological process, after burns, &c.

64. The author regards the use of cod-liver oil, continued for some time, a most certain, safe and useful prophylactic to attacks of croup.

65. The author thoroughly reviews all the various circumstances under which yellow discoloration of the tegumentary system can occur in infants. The article is full of suggestive and practical observations. Speaking of icterus accompanying phlebitis umbilicalis, a very dangerous disease, he very properly urges the necesity of examining the condition of the umbilical vessels in every case of infantile jaundice.

66. A peculiar pelvimeter is used in the *Gebär Anstalt*, or Lying-in Hospital, of Munich. It consists of the forefinger of an india-rubber glove, having at-

tached to its point a tape, graduated on one side, and having on the other raised dots corresponding to the markings, thus enabling the operator to ascertain measurement by touch. In using it, the index finger of the right hand, armed with this glovelet, is passed per vaginam to the promontory of the sacrum, and the tape is stretched by another finger to the symphysis pubis, by which means the antero-posterior diameter of the pelvis is readily obtained. By changing the direction of the finger, the other diameters are ascertained. This little instrument is exceedingly simple, and is certainly a deal more useful in practice than many of the formidable-looking pelvimeters of other obstetricians.

67. "Comparing the lesion of Peyer's glands as found in the child with that occurring in the adult, we notice some remarkable peculiarities.

(1.) In children, the raised patches are of a soft consistence, especially when death occurs early, while in adults they show a hard, elastic resistance. In the latter, the typhoid infiltration destroys the follicles, their interspaces and walls, as well as the covering mucous membrane, and ulceration and scab formation must ensue; while in the former, the mucous membrane is only adherent or softened. From this difference it is clear why the disease is less dangerous in children than in adults. On what this difference of anatomical lesion depends is as yet unknown. It is surely not accidental, and may perhaps become understood on thorough investigation into the peculiar structure of the glands during childhood.

(2.) While the submucous tissue is always diseased in the adult, it is, according to Barther and Rilliet, in the child, neither injected nor softened, but almost always perfectly healthy. Friedleben declares, however, to have found this submucous connective tissue in a state of softening in children as well as in adults, so that further exact observations are wanted to settle this point.

(3.) According to Friedleben, the typhoid infiltration is more incomplete in children than in adults.

(4.) In children, the inflammation of Peyer's and the solitary glands usually terminates by resolution. This is probably principally due to the superficial character of the inflammation, the deeper tissues remaining in the healthy state. Ulcerated patches, so extremely frequent in adults, but seldom occur here; and this fact of the resolution of inflammation of Peyer's glands in children explains why neither ulcers nor cicatrices are found after death, although the symptoms during life left no doubt as to the actual existence of typhoid fever. The rare occurrence of ulceration yields also a satisfactory explanation of the rarity of hæmorrhage and perforation of the bowels in children."

Having translated the above extract, which speaks for itself, we take pleasure in recommending the entire monograph of Dr. Bierbaum as the best treatise on typhoid or enteric fever, as it occurs in the age of childhood, extant.

REVIEWS AND BIBLIOGRAPHY.

Clinical Lectures on the Principles and Practice of Medicine. By JOHN HUGHES BENNETT, M.D., F.R.S.E., &c., &c. From the last Edinburgh Edition, with 500 illustrations on wood. New York: S. S. & W. Wood. 1860.

The present edition of this work is a reprint from the third Edinburgh edition, and contains the latest additions and revisions of its author. Upon a first view, the reader would be struck with the neat typographical execution of the volume, and the number and excellence of the cuts. This is no small merit in any book; for the dress of a good book, if it does not enhance its value, certainly does make it more attractive, and a poor book meets a readier sale from an inviting appearance.

There is no question as to the value of the work before us. The rapid sale of two editions, and the copious additions made to the third, prove that it has met the wants of the medical student. If we seek the cause of this popularity, it will be found that the plan of the work supplies the necessities of a large class of practitioners. Founded upon pure science, the principles of medicine are formularized upon the present position of physiology and pathology, and clinical medicine is brought in to illustrate, by its practical demonstration, the theoretical views advanced. Theory is not discarded by the author, for every advance in the art of medicine has been owing to the result of scientific investigation, and he believes with Cullen, that "the truly judicious practitioners and good observers are such as have the most extensive views of the animal economy, and know best the true account of the present state of theory, and therefore, know best where to stop in the application of it."

Entering upon his work with this spirit, and testing each theory by the touchstone of experience, guided by the light of science, it is not astonishing that we should find long-established views doubted, accepted theories controverted, and new theories proposed.

The plan of the work is different from any treatise on the practice of medicine which has ever issued from the press. It is divided into ten sections, as follows: Section 1st, Examination of the patient. The method of examination is that known as Rostan's, by which many interrogatories are avoided, and the condition of the patient is arrived at in the most direct manner. This section points out the different symptoms to be investigated, and explains the method to be pursued by auscultation, percussion, by the microscope, and by chemical tests.

Numerous cuts illustrate the text, and aid the student in pursuing his own researches. In addition to this, how to conduct, and what to observe at, a post-mortem examination, is given in detail.

Section 2d is devoted to the discussion of the principles of medicine, and it is in this section that the varied scholarship of the author is shown by his clear *exposé* of the present status of physiology and pathology. The result of the recent advances in morbid anatomy, pathology and clinical observation has been, says the author, " a complete overthrow of nosological systems. We now attempt to trace all maladies to their organic cause; and just in proportion as this has been successfully accomplished, has medicine become less empirical and more exact."

The author divides all diseases into two great classes: 1, Diseases of nutrition; and 2, Diseases of innervation.

The different steps by which the nutritive process is impaired and the blood diseased are then passed in review, and the forms of disease arising from any derangement in the circle of the function of nutrition demonstrated, and from this the general principle is laid down, " that diseases of nutrition and of the blood are to be combated by an endeavor to restore the deranged processes to their healthy state in the order in which they were impaired; that a knowledge of the process of nutrition is a preliminary step to the proper treatment of these affections; that the theory of acting directly on the blood is incorrect; and that an expectant system is as bad as a purely empirical one."

The function of innervation is, in its turn, examined, and the general anatomy, physiology and pathology of the nervous system briefly explained.

Exudations are then treated of; the three varieties, simple, cancerous, and tubercular, separately considered, as comprising the greater part of organic diseases as distinguished from functional diseases; of lesions of nutrition, as separated from lesions of innervation.

This Section also considers the morbid growths of texture—their general pathology and treatment—the morbid degenerations of texture, and concretions. This part of the work is profusely illustrated with microscopic drawings, taken from different sources, as well as original with the author. These two sections constitute a fair *résumé* of the histological and pathological science of the present day, which leads to a more correct diagnosis and a purer therapeutics.

By these gradations, the author is led to speak of the changes which have arisen in the treatment of disease as the consequent of the advancement in our knowledge of diagnosis and pathology. This con-

stitutes the subject of the next, Third Section, and in this is given his paper on the Diminished Employment of Bloodletting and other antiphlogistic remedies in the treatment of inflammations, which was the subject of so much controversy in Great Britain during the years 1857–58.

As an appendix to this paper, are added the views of other distinguished medical writers and teachers of Great Britain, elicited at the time, by the novel position taken by Prof. Bennett. This Section is a most instructive chapter in the history of medical controversies, and in our minds, fully sustains the opinion we once heard the author express, that a great revolution was about to take place in the treatment of diseases; that old theories would be abolished, and a new school of medicine would arise, based upon our more thorough knowledge of the laws of life, and our better understanding of those phenomena which are produced by a disturbed organism, and known as disease.

The remainder of the volume is mostly occupied with the consideration of special diseases, as they occur in the nervous, the digestive, the circulatory, the respiratory, the genito-urinary, or the tegumentary system. These Sections are clinical lectures, with reports of cases as they presented themselves to the author during his period of service at the Royal Infirmary of Edinburgh, and reported by clinical clerks appointed for the purpose. The report of each case or class of cases is followed by a commentary, in which the author explains the marked symptoms in the case, as illustrated by the pathological appearances, when death occured.

The last, Tenth Section, is devoted to the discussion of Diseases of the Blood; and here, the same plan of clinical illustration is carried out.

This slight analysis of the excellent volume before us is all that our space will admit; yet this alone will show to both practitioner and the medical student just entered upon his career, the great value of the instruction found in it. To the one, it cannot fail to be other than a much consulted companion, and to the other a most reliable guide. For the young student, we do not know a work on practice we should recommend so highly as this of Dr. Bennett.

The Physician's Visiting List, Diary, and Book of Engagements for 1861. Philadelphia: Lindsay & Blakiston, 25 South Sixth Street, above Chestnut.

The Physician's Hand-Book of Practice, for 1861. By WILLIAM ELMER, M.D. New York: W. A. Townsend & Co., 46 Walker St.

Records of Daily Practice. A Scientific Visiting List for Physicians and Surgeons. New York: Baillière Brothers, 440 Broadway.

Visiting Lists have become as much a distinguishing necessity of our days, as the gold-headed cane was in the times gone by, when

> "Each son of Sol, to make him look more big,
> Had on a large, grave, decent, three-tail'd wig;"

and verily, to observant philosophy, the relative use of the cane and the memorandum-book marks the difference between the physician of now and of then.

We have placed the three little books to be reviewed in the order of time in which they were for the first time placed before the profession, and of patronage they receive. We do not wish to be understood to have arranged them in the order of their merit, because each has merits peculiar to itself; especially should we be unfair to the "*Records of Daily Practice*," did we make the impression upon the reader that it is least deserving, because here last on the list. Its special aim is to remedy an evil long felt and complained of. Lord Bacon, in speaking of the deficiencies of physicians, says, (Advancement of Learning, Book II., Narrationes Medicinales): "The first is the discontinuance of the ancient and serious diligence of Hippocrates, which used to set down a narrative of the special cases of his patients, and how they proceeded, and how they were judged by recovery or death." Such narratives, carefully arranged, not only prove of inestimable value to the practitioner himself, but they forward the progress of the healing art, and especially tend to increase our knowledge of diagnosis and therapeutics.* To facilitate, and thereby induce the profession to *make* systematic records of such statistical narratives, to meet both the wants of science and those of the practitioner, (when it is known how little attention—either from actual want of time or from neglect—the vast majority of physicians bestow upon ever taking notes of even their most important cases,) is certainly a most commendable endeavor, and a most difficult task to perform. Such is the object of *Baillière's* publication. Having ourself experi-

* Tanner's Clinical Medicine. Philadelphia, 1856, p. 32.

enced the difficulties of a similar attempt, we can keenly appreciate the author's labor. He has succeeded in presenting an admirable and satisfactory little book. We have not yet mentioned—what, indeed, we don't learn until after having read the Preface—that the author is A. N. Bell, M.D., member of the Kings County Medical Society, one of the physicians to the Brooklyn City Hospital, etc. To give the reader an idea of the arrangement, we must state that every two opposite pages may be considered as forming one folio. The upper third of the left-hand page has the four headings: Designation of the individual; Hygienic influences; Hereditary influences; Previous diseases—placed one under the other, with one intervening line, without ruled spaces. The right-hand page, the two headings—Habitual state of the functions, and History of the present disease. The lower two-thirds of both pages across, contain, under the heading, Present state of the patient, seven spaces, separated by vertical lines, with the subheadings: Date, Obvious conditions, Digestive system, Secretions, Circulating system, Respiratory system, and Treatment. From the Preface we learn what the author wishes to be recorded under each heading:

"*Designation of Individual.*—Name, Age, Birth-place, Size, Form, Muscularity, Temperament.

Hygienic Influences.—Occupation, Residence in relation to Light, Temperature, Moisture, Miasm, Habits of Exercise, Quantity and Quality of Food, Intemperance.

Hereditary Influences.—Age of Parents at Patient's Birth; their habitual state of health and diseases. Collateral relations.

Previous Diseases.—Chronic—Scrofulous, Swelling of Glands, Caries, Affections of Joints, Ophthalmia, Cutaneous Eruptions, Worms, Syphilitic Diseases, Use of Mercury, Rheumatism, Gout. Acute—Fevers; —continued, Remittent, Intermittent, Eruptive Fevers, Local Inflammations, Cholera.

Habitual State of the Functions.—Digestion.—Appetite, Existence of Oppression, Pain, Constipation, &c. Respiration—Frequency and duration of Catarrhs, Dyspnœa, Cough, Expectoration, Hæmoptysis. Circulation—Character of Heart's Action, Pulse, Lividity. Calorification—Susceptibility to Cold, Temperature of Extremities. Secretion—Œdema, Transpiration, Urinary Function. Nutrition—Weight at different periods, Innervation. Reproduction—Epoch of Puberty, Functions of Reproductive Organs, Number of Pregnancies, Parturition, Lactation.

History of the Present Disease.—Supposed Epoch of Invasion; probable causes, existence and nature of preliminary symptoms, causes and nature of morbid changes or parts specially implicated; state of the other functions or parts since commencement of the disease. Diagnosis and Prognosis.

Obvious Conditions.—Attitude, Expression, Voice, Intellectuality, Sensibility, Mobility, State of the Pupils, Hearing, Color, Temperature, Nutrition, Œdema, Moisture of Surface, Mode of Respiration, Character of Discharges or Secretions Revealed by Instrumental Examinations, Lactation, External Lesions.

Digestive System.—The Tongue;—Manner of Protrusion, Tremor, Color, Form, State of Papillæ, Indentations; Character of Secretions on Tongue and Teeth, Taste in Mouth, Appetite, Thirst, Deglutition, Nausea. Pain and Tenderness at Epigastrium, and in Abdomen. Character of Matters vomited. State of Bowels; Meteorism, Ascites, Tumors. State of Liver, Spleen, &c. Rosepots, Petechiæ or Sudamina, Alvine Evacuations.

Secretions.—State of the Skin. Urine,—Quantity, Color, Odor, Sediment; Chemical Character,—Acid, Alkaline, Coagulability.

Circulating System.—Inspection of Præcordial Region; Pulse, Auscultation of Heart's Action, Sounds, Frequency, Force, Extent, and Rhythm. Auscultation of Arteries and Pulsating Tumors. State of Veins and Character of Blood, if any has been drawn. Percussion.

Respiratory System.—Frequency and Character of Respiration;—Thoracic, Abdominal, Laborious, Noisy, Cough;—Frequency, Character, Pain in Thorax;—Seat, Character, and Sources of Aggravation. Expectoration;—Facility, Quantity, Color, Tenacity, Aeration, Transparency. Form of Chest,—Inspection, Mensuration, Comparative Movements. Auscultation. Percussion. Succussion. Voice.

It is obvious from the foregoing, that a record of abnormal conditions only, is contemplated. The object being to so arrange the SOURCES OF DIAGNOSIS, that everything of importance may be considered, but not noted unless there is a departure from the normal state.

A full record of some cases will require more space than is afforded by the appropriate column, but such cases will generally be deficient in symptoms provided for under other Headings; the lines therefore may be written across without confusion. Again, as the Headings of the pages under "The Present State of the Patient" are all alike, cases of long continuance may be carried forward to new pages, or to pages unfilled by cases of short duration.

With this understanding, and by the use of such abbreviations as any one can adopt, there appears to be ample provision for a full record. And as the book is adapted to continuous use, it may be exhausted and a new volume commenced at any season of the year."

Seventy-one such double pages are given, followed by additional blank leaves; for microscopical examinations (4 pages,) obstetrical engagements (4 pages,) vaccination engagements (4 pages,) consultation and other professional engagements (4 pages,) list of nurses and address (2 pages,) meteorological observations and endemic influences (4 pages,) miscellaneous memoranda (6 pages,) index of diseases (2 pages,) and index of patients (2 pages.) One fault here to be found is, that the pages are not numbered. To page the book, would

have been an easy matter to the printer, but is one of great inconvenience and trouble to each physician who uses it; and we trust that the publishers will see the propriety of profiting by the suggestion in the issue of their next edition.

Lindsay & Blakiston's Visiting List is designed for a business record of practice; as Baillière's, for a scientific one. Neither of these supersedes the use of the other; used conjointly they admirably complete each other's deficiencies, and enable the physician to keep a very convenient and clear account of his practice in both points of view. L. & Bl.'s little book is the pioneer of its kind in America. It is the most extensively patronized; and, indeed, is so well known to the profession, that a detailed description in this place seems uncalled for. We will only say that, besides the convenient supply of blank leaves, for recording the visits made each day, and for various other memoranda, it contains six pages of printed matter, four of which serve as a prompter to the memory, in cases of poisoning and asphyxia, the remainder being appropriately taken up by an almanac, a table of signs, and a table for calculating the period of utero-gestation.

Townsend & Co.'s publication is designed to combine a business and a scientific record; but in this attempt it fails in many particulars of being near as practical and useful, as both or either of the two preceding. Its arrangement is too complicated, and the space for symptoms and treatment is entirely inadequate. Yet it is not only in its blanks, but more especially also in the great amount of its printed matter, far more complete than either of its compeers, and will prove a valuable companion to the physician, who can properly estimate its character and discriminate between its commendable and objectionable contents and features. In the first place, its name is a misnomer, at once prejudicial to its scientific estimation; in the second place, the regularly educated physician will hardly ever look at its classification of diseases. But passing by the objectionable features in the *general character* of the book, we come to some special objections and suggestions. We have highly praised and recommended it in these pages since its first appearance, willingly believing in its promises of improvement from year to year; and in again presenting it to our readers' notice, we deem it our duty to examine how far these promises have been fulfilled. In its preface it claims to be "by far the most useful manual of its kind to the intelligent physician." Now, medical science, and consequently, "practice" thereon based, is progressive, and its "Hand-Books," if imperfect in the beginning, will hardly attain perfection by being annually reprinted from stereotype plates.

The expense of altering such plates has proved a great drawback on the introduction of improvements, and is the source of many inconveniences. Thus, we find in the second edition, for 1858, a promise of doing away in the next with the letters after numbers in the list of remedial agents, there apologized for by want of time to renumber, etc. This "time" has, however, not yet been found. Other instances could be given. This fault of want of correction is still more glaring on examination of the edition before us as compared with that for 1860. Indeed, it would seem that the only change accomplished in this "*revised* edition," as the good-natured and confiding publishers unsophisticatedly announce it, is the omission on the title-page of the name of the co-author. The inattention, or perhaps we should say, indolence displayed, is carried so far, that we may notice even the typographical imperfections and errors that escaped correction last year, faithfully reproduced by the (*un*) "revised" stereotype. Besides, the table of contents still stares us in the face with "Calendar for 1860," and the careless paradoxical lapsus "Appendix, containing omissions and additions;" and so on all through the text. Instead of "the engraving of a very perfect Obstetric Calendar," promised last year, we still have the brief table for calculating the period of utero-gestation, introduced in Lindsay & Blakiston's Visiting List, &c. Entertaining, as we do, an opinion favorable in most respects of the "Hand-Book," we have made these strictures in the interest of the work itself, and of those for whom it is intended, trusting that they may stimulate the editor to a little wholesome exertion, and the publishers to a little as useful watchfulness in the next "revised edition." Having last year informed our readers of its contents, and finding nothing in the copy before us that was not in last year's edition, we only repeatedly call attention to the value of having in such a convenient and compact form so much matter of profitable reference. In spite of its faults, we warmly commend it to an increasing circle of patrons as the visiting list we ourselves shall use, and which we regard as the best of all of which we know.

As to externals, the three books under consideration are alike in being of pocket-book form, with tucks, place for pencil, and pocket for loose papers. In size, Lindsay & Blakiston's, and Townsend's, are preferable, Baillière's being a little too wide. In quality of paper, in printing and ruling, and altogether, in beauty and elegance of style of getting up, Townsend's deserves the palm. In durability of binding, a very important particular, all three are passable, but neither of them comes quite up to our standard; Baillière's approaches nearest.

The price of Townsend's is $1.25; of Baillière's, 75 cts.; and of Lindsay & Blakiston's, 75 cts., with varying prices for varying sizes and bindings.

The Pocket Anatomist. Being a Complete Description of the Anatomy of the Human Body. For the use of students. By M. W. HILLES, formerly Lecturer on Anatomy and Physiology at the Westminster Hospital School of Medicine, etc. Philadelphia: Lindsay & Blakiston, 1860.

When we tell the reader that the size of this book is five and a half inches by three, with half an inch in thickness, he will at once understand the fitness of the first part of its title; when we further tell him that it contains 263 pages, all told, of minion print, making, on a rough calculation, but little over 300,000 "ems," he will perhaps as readily understand the unfitness of the word "complete," in the second part. After this fault-finding, we are in duty bound to add, however, that this is about all the fault-finding Mr. Hilles has laid himself liable to. Keeping his aim constantly in view—to convey to the student concise information of the structures and functions of the human body, to direct his attention to the most important points connected therewith—he has prepared a work unsurpassable in its own little way. We are not of those who object to compendious manuals or pocket-books for students when they are kept in their proper province; and if there is any branch of medical study in which they are essentially useful, it certainly is Anatomy, in which so much depends on memorizing. From the author's preface, for the little volume before us is a republication, we learn that there is still a very inadequate supply of subjects for dissection in the "United Kingdom," an obstacle happily surmounted at the flourishing schools of this country. If we were again in our student days, we would not wish, as to Anatomy, a better text-book on our table, than the recently published work by Prof. Leidy,* nor a better memorandum-book in our pocket than Mr. Hilles'. It is a very good plan, and one we recommend every student to follow, to keep such a little pocket-book constantly with him for self-examination and refreshing of his memory at all spare moments, in his walks and rides through the city, while waiting for lectures, &c., &c. And we can sincerely urge that the "Pocket Anatomist" will prove a profitable companion to every student, while laying the foundation to that knowledge which itself forms the foundation of Medicine.

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* For a review of this work see MONTHLY, *Jan. No.*, 1861.

An Epitome of Braithwaite's Retrospect of Practical Medicine and Surgery—containing a condensed Summary of the most important cases; their treatment, and all the remedies and other useful matters embraced in the forty volumes—the whole being alphabetically classified, and supplied with an addenda, comprising a table of French weights and measures, reduced to English standard; a list of incompatibles; explanation of the principal abbreviations occurring in pharmaceutical formulæ; a vocabulary of Latin words most frequently used in prescription, and a copious index. In six parts. By WALTER S. WELLS, M.D. New York: C. T. Evans.

This lengthy title perfectly explains the scope and intent of the work. But little remains for us to do. That little is to speak of the manner in which the plan proposed is carried out, and of the general usefulness of such a work.

Nearly every language has its corresponding work for its own medical literature. The annuals, year-books, &c., which have appeared regularly for many years past, in various countries, prove that there is a demand for such literature, and the demand signifies a need upon the part of the profession. The large sales of the reprints of Braithwaite's Retrospect and Rankin's Abstract in this country show that the profession here is no exception to this general rule. The Retrospect now constitutes a library in itself, its forty numbers, embracing a fair *résumé* of the medical literature of England, France, Germany, and partially so of this country, for a period of twenty years. This is now too voluminous for the shelves and the purse of those who have not been yearly supplied with the volumes. The Epitome condenses these forty volumes into six, and conveniently arranges the articles in alphabetical order, thus facilitating reference. The labor has been a tedious one, but from the examination we have given of the Epitome, it cannot prove otherwise than acceptable to both those who have the forty volumes, as well as those who have not.

A Dictionary of the English Language. By JOSEPH E. WORCESTER, LL.D. Boston: Hickling, Swan & Brewer. 1860.

Worcester's Dictionary has been for some months upon our table, and should have been noticed before, but for the crowded state of our pages. We have both Webster's and Worcester's Dictionaries; and, after a careful examination of these rivals for popular favor, we have no hesitation in giving our preference to the latter. Worcester's

Dictionary is truly an encyclopædia of itself; we have not sought for a word pertaining to literature, science, or art, without finding it, and correctly defined. Worcester's Dictionary has better type than Webster's, has larger pages, and more of them, the illustrations are equally good, and the words and illustrations are to be found in their proper places. Worcester's contains more words than any other English dictionary, and the definitions are accurate and concise. We believe it to be the most accurate and complete Dictionary in the English language; and to those who are in want of a volume of the kind for daily reference and consultation, we would most cordially recommend it. No greater praise can be given than the following opinion of William Cullen Bryant: "The new and authentic etymologies, the conciseness and completeness of the definitions, the nicety with which the different shades of meaning in synonyms are distinguished, and the conscientious accuracy of the work in all its departments, give it, in my judgment, the highest claims to public favor." O. C. G.

EDITORIAL AND MISCELLANEOUS.

— Once more it becomes our duty to greet the readers of the MONTHLY at the close of the year. With this number, the *fourteenth* volume of the journal is completed, and it is with no small degree of satisfaction that we look back upon its well-filled pages and recall the many hopes we have had fulfilled, the many anticipations we have seen realized. The two volumes included in the year, together, contain over 1,000 pages of reading. An extra number, embracing the first four lectures of Dr. Dalton, was issued in April, and was sent to all paying subscribers upon the receipt of three dollars for the year's subscription. If any who have paid should have failed to receive this extra number, by informing the editor, the omission will be supplied.

The course of our labors has not been altogether smooth, nor free from trials. The complaint which seems to have visited all our contemporaries has also touched us. It is an epidemic which, within the time of our editorial career, has proved fatal to many a flourishing medical journal, and brought its editor to lament his confidence in a smiling future full of golden expectations. We believe we have done our duty to our subscribers, have given them substantial entertainment, and we believe it to be their duty, as men, to be as honest towards us. If the journal is not desired by those who have not helped

us to pay its expenses, let them have the kindness to tell us so; and if they find that it meets their wishes or their wants, they will, by promptly paying, do much to insure greater improvements, a fuller harvest from the pens of our own medical writers, and richer gleanings from the granaries of the Old and New Worlds. Be true to us, and we will, on the other hand, be faithful almoners of your bounty.

We hope, by the aid of our subscribers, to enter into such arrangements with medical writers in different parts of our country, as to insure a better volume the next six months than we have as yet given. Our intention is always to improve, and we only need that recognition of our efforts, which, while it lightens our heart, makes our purse heavy, to carry all our plans into successful execution.

— The *Nashville Medical Record*, which had failed to reach us for two months past, has this month reappeared in a new form. Instead of the octavo form, it has assumed a quarto size, and resembles in style and general typographical dress the *American Medical Times*. Prof. Wright, one of its earliest editors, has retired from the journal, which will hereafter be conducted by Profs. Abernathy, Maddin, and Callender, all of Shelby Medical College.

— Two new Medical Journals are announced: the *Baltimore Journal of Medicine*, to be published bi-monthly, and to contain 100 pages, at least. Dr. Edward Warren, Prof. of Materia Medica and Therapeutics in the University of Maryland, is to be the editor. The other is the *Berkshire Medical Journal*, to be published under the auspices of the Berkshire Medical Society, and to be edited by Drs. Wm. Henry Thayer and R. Cresson Niles, both Professors in the Berkshire Medical College.

The first number of these new journals will be issued in January.

Union of Wounds of the Scalp Effected by Means of the Hair, instead of Sutures. By H. G. Davis, M.D., New York. Mr. Editor: In your journal for November, I notice a mode of uniting the lips of wounds of the scalp by using the hair upon the edge of the wound, in the place of sutures. With your leave, I will give in your journal a plan adopted by me, which differs somewhat from that mentioned by Drs. Campbell and Pitts:

The hairs upon the edge of the wound, to the distance of one-sixteenth of an inch from the edge, are separated from the other hairs, combed straight, then cut off, leaving the portion attached to the scalp about an inch long. These are to be laid upon the adhesive surface of a strip of adhesive plaster about two inches long, of any

width you choose, according to the direction you carry the plaster that is to be attached to it. After the hair is pressed down upon the adhesive surface, another strip is to be applied over it of the same width, and of sufficient length to pass over the head to the skin beyond the hair—as upon the forehead, temples, or back of the ear—when it can be secured to the skin. This arrangement of the hair upon the adhesive plaster enables the surgeon to bring the edges of the wound in perfect coaptation without the slightest irritation. To illustrate the application, I will state a case:

A gentleman was thrown over the side of his carriage into the road, striking the anterior and superior portion of his head upon a sharp stone; the scalp was divided to the length of four inches and a half—the cut being of a crescent shape—and separating the scalp from the side of the head to the depth of two and a half inches. The wound was filled with gravel and the loose hairs divided by the stone.

The wound was carefully cleansed by squeezing warm water from a sponge upon its surface, and the hairs removed, as far as possible, without touching the parts. When every foreign substance was removed, the flap was brought to its place, and secured upon the opposite side of the head; a cold water compress was kept applied. At the end of twenty-four hours, the separated scalp was found to have united perfectly by the first intention—no suppuration taking place at any point. Let me add, that no mode effecting the coaptation of parts will secure union by the first intention where the exposed surfaces have been rubbed with a sponge, or otherwise irritated.

Dislocation of the Femur into the Thyroid Foramen. By Silas Hubbard, M.D., Hudson, Ill. Messrs. Editors—As it is still a novel method of reducing laxation of the femur downward, according to Reid's method of reducing dislocation of the os femoris on the dorsum, ilii, &c., I am induced to believe even one case might be of some interest to your readers, and would add a little to the stock of useful knowledge; therefore I will as briefly as possible relate the following case, which came under my own observation:

August 17th, 1860, I was called to attend Mrs. L———, forty years of age, who had been thrown from a horse; she was taken up helpless. I arrived soon after the accident, and found the right limb distinctly inverted, and on measurement, one and one-fourth inches longer than its fellow, with all the signs of dislocation of the head of the femur downward into the obturator foramen; I informed her friends of the nature of the accident, and also that the left hip was also badly sprained, and that to produce the accident she must have

fallen on her lower extremities while they were very much abducted; and according to their wishes, I proceeded forthwith to reduce the dislocation. I called no assistance, neither did I give any anodyne, neither did I change her position on the ordinary bed she lay on; she was lying on her back, on the edge of the bed; I seized the ankle with my right hand, and just above the knee with the left hand, and flexed her leg on the thigh, and in this way strongly adducted the limb over the opposite one, and caused it to sweep over the abdomen in a circular manner, continuing the movement till the limb was strongly abducted, and then fetching it down, while abducted, in a gentle and rotary manner. All present had the satisfaction of hearing the dislocated limb slip in its proper place and all deformity disappear, the patient expressing herself very much relieved. I put the limb in a straight counter-extending splint for three or four days; she began to walk in about thirty-five days, and recovered as fast as is usual in such cases.

HUDSON, ILLINOIS, November 26th, 1860.

— Dr. Mercer Adam, whose "Medical Notes from the Continent" we have at various times taken from the *Edinburgh Medical Journal*, has resumed the series in the July number of that journal by a description of the Hospitals of Munich. We select for this month his notes of the *General Hospital of Munich:*

It contains 54 small wards, each having 12 beds, and between 40 and 50 private rooms for patients who can afford to pay a higher rate for their board. A suite of these separate rooms is reserved for the accommodation of any of the court-servants who may fall ill, where they are treated and maintained at the expense of the king. Other chambers are specially appropriated to sick students of the University and Art-Academies, etc. The wards are about 38 feet long, 24 feet wide, and 14 feet high; and each patient, supposing all the twelve beds to be occupied, has a supply of 1135 cubic feet of air. This is rather a scanty allowance of air compared with that in the wards of most institutions; thus in Guy's Hospital there is a cubic capacity of from 1600 to 1800 feet per head, and in most of the French military and civil hospitals each patient has a supply of fifteen hundred feet, which is regarded by sanitary authorities as the minimum quantity necessary for the health of the inmates. But the statistics of the Munich Hospital, as we shall presently see, show a very low rate of mortality, which is probably attributable to the existence of a very efficient system of ventilation, which compensates for the defective size and capacity of the wards. The ventilating apparatus in use was invented by Dr. Häberl, a very ingenious man, who was appointed head-physician and director of the hospital on its being opened in 1813. It consists of two parts: the one a suction-pipe, which abstracts all the foul atmosphere from the wards; the other a ventilator, by the pressure of which a greater or less supply of fresh air is introduced into the cham-

ber, according to the season of the year, the number of occupants, etc. The apparatus possesses many advantages; it is entirely self-acting, requiring no superintendence or regulation by the nurses, and the medical men report very favorably on its simplicity and efficiency. Another circumstance, which has doubtless contributed to the salubrity of the wards here, (as at Berlin and in all the other hospitals where I have seen it used,) is the varnishing of the floors of the ward with a composition of linseed oil and litharge, which invests the porous wood with a hard shining coat. Floors thus varnished are unaffected by the temperature; they are easily kept sweet and clean; and they are quite impervious to all foul discharges or unpleasant fluids which may be accidentally spilled upon them. The varnish is also very durable; it is only renewed once a year in Munich Hospital, except in some of the clinical wards, where it requires to be applied half-yearly, as it is quickly worn away by the feet of the crowds of students who daily cross these floors. Everywhere that I have seen it used, the physicians have spoken to me in the highest terms of the increased freshness and salubrity which it imparts to the wards. Skoda's clinical wards are the only varnished floors in the Vienna Hospital, and they always smell sweeter than any of the others in the building. Miss Nightingale, in her evidence before the Army Sanitary Commissioners, as well as in her recently published work on the construction and management of hospitals, recommends the adoption of some such varnish for the floors of Army Hospitals; so, in the hope that it may prove useful to some of my professional brethren, who may wish to try it in their wards, I append the receipt for the manufacture of the preparation.*

All the lobbies and corridors throughout the house are paved with triangular slabs of a cream-colored lime-stone, which is very hard, and carries as high a polish as Dutch tiles.

The private rooms are neatly fitted up with furniture of cherry and walnut woods, and in each there is a bell which sets in motion an "indicator" in the corridor, to enable the patient to summon his attend-

* This varnish is prepared by dissolving finely powdered litharge in boiling linseed oil, stirring the mixture constantly during the process. When the oily compound is removed from the fire, some drying material *(seccatif)* is cautiously added, and the whole is stirred to prevent it from being burned or blackened in the vessel. The varnish requires to be warmed before use, to insure its perfect fluidity, and it must be well stirred before its application to the floor. I append a note of the quantities of each ingredient used in Munich Hospital for the preparation of sufficient varnish for the floor of a ward 38 feet long and 24 feet broad. I have reduced the original weights (Bavarian standard,) which are given within brackets, into our English apothecaries' measure; and I have also added the cost of the ingredients in Germany:

				s.	*d.*
Linseed oil	℥Lii.	[3¼ ℔s. Bavn.]	costs about	1	9
Litharge	ʒxi.	[2 Loth. 3 Qt.]	"	0	0½
"Dryer"	ʒxi.	[do.]	"	0	1½
Cost of labor,	. . .	. . .	. . .	1	8
Cost of varnish for ward of 912 cubic feet,				3	7

I do not exactly know what is the composition of the *seccatif* or *dryer* which is used, but I presume it resembles the substance known in English commerce by the name of "Patent dryer."

ant. The cost of residence and treatment in the hospital varies according to the accommodation furnished; patients who occupy private rooms, pay according to the size, situation, and furniture of the apartment, from 1s. to 2s. a day. The charges are about one-fourth higher in the winter than in the summer months. The hospital possesses a good many "foundation beds," which entitle their founders to recommend patients all the year round for gratuitous residence and treatment. One of these beds can be founded by a donation to the hospital funds of a sum capable of yielding a clear annual income of 100 florins, or about L.8, 10s. sterling.*

A long underground passage conducts from the hospital to the dead-house and *post-mortem* rooms, which are clean, excellently appointed, and well ventilated. Separate vaults are also provided here for the corpses of those who may die of contagious diseases. Cases of small-pox are not received into the general hospital, but are treated in a separate building within the grounds, where they are completely isolated from the other patients.

The staff of the hospital comprises a director or superintendent, four principal physicians, seven assistant physicians, and one medical officer for the care of the small-pox cases. Professors Pfeufer, Ringseis, and Gietl, are the clinical physicians; Professor Rothmund teaches clinical surgery; and a syphilitic *clinique* is conducted by Professor Horner. Professor Buhl, the eminent pathologist, and Dr. Lindwurm, of whom I have spoken, are both ordinary physicians.

The nurses, with one or two exceptions, are Sisters of Mercy, of whom there are sixty, with a superintending superior, attached to the hospital. This order is a very extensive one in Bavaria, where it was established in 1832. In 1854 it possessed no less than 46 religious houses, and numbered 236 professed sisters, 82 novices, and 42 probationary candidates; in all, 360 members. About 300 of these sisters are employed as nurses in hospitals, or as attendants in other charitable institutions. In some places, as in Munich, they are allowed to act as nurses in private families. They are excellent nurses, from having been carefully trained in all the duties of a sick-room; and they keep the wards, the linen of the patients, etc., exceedingly neat and clean. Being all, more or less, women of education and refined feelings, having been properly educated in all that concerns the care of the sick, and being under the immediate control and supervision of a responsible superior, they are calculated to be more efficient than hired nurses. Their duties, having been undertaken from motives of charity and religion, and not from a mercenary spirit, are likely to be performed more conscientiously than if rendered by mere hirelings. The value

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*It must be recollected that German hospitals are conducted with great economy. Dr. Grätzer of Breslau states, that among the German Hospitals (not in Prussia), the average cost of each patient is highest in Hamburg and Vienna (about L.1, 11s. per head;) it is less in Dresden and Prague (about L.1, 7s.;) while in Munich, each patient only costs from 17s. or 20s. during his average residence of sixteen or seventeen days in hospital.—*Wiener Med. Wochenschrift*, December, 1854.

of trained sisters is becoming more and more acknowledged. All over the continent, institutions are being established for training Catholic Sisters of Mercy and Protestant Deaconesses for the duties of nurses;* and even in our own country a feeling is daily gaining ground that the sick in our hospitals might be more advantageously committed to the care of refined and educated Christian women, than to the tender mercies of the ignorant Mrs. Gamp.

The average number of patients treated annually in Munich Hospital is upward of 7000; but during the cholera epidemic of 1853–4 as many as 9271 were treated during a year. The rate of mortality is very low, being about one in every twenty treated.† It rose as high as one in twelve during the cholera year, and also in 1836–7, when there was an epidemic of influenza in Munich.

I cannot recall to mind any cases of special interest in the wards at the time of my visit. I saw many cases of the endemic typhoid fever of Munich, as well as of the remittent fever so common in the neighboring plains. The endemic fever of Munich resembles that variety so well denominated *pythogenic* by Dr. Murchison. It arises from the foul smells which shock the nose in many of the alleys of that city, and from the malaria produced by decomposing organic matter which has not been adequately removed by drainage. It is most prevalent during the months of February and March; but few strangers can reside for six months in Munich without being more or less attacked by it. It is ushered in by rigors; the pulse becomes quick and soft, and the tongue dry and brown; crops of characteristic rose-colored maculæ appear between the seventh and fourteenth days; there is abdominal tenderness; and, in fatal cases, the glands of the ileum are generally found to be ulcerated. Delirium is rare in the course of this fever. I saw one case in which head symptoms had appeared, and Dr. Lindwurm assured me that these were a very unusual complication. Critical discharges frequently occur, in the form of diarrhœa or epistaxis. The latter, when moderate, is regarded as rather favorable to the patient; but when the hæmorrhage is great it is arrested by means of pledgets of lint saturated with the Sol. Ferri Perchlorid. In the treatment of this fever gentle febrifuge salines are prescribed at first, and plenty of strong *bouillon* is given to keep up the strength. As soon as the state of the tongue will warrant its use, quinine is administered, in doses of one or two grains every four or six hours; and under this mode of treatment the majority of the cases do very well.

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* "Germany has (1854) nine training establishments for deaconesses; Southern Germany has two, at Carlsruhe and Stuttgard; Northern Germany five, at Berlin, Breslau, Königsberg, Stettin, and Ludwigslust; and Central Germany two, at Kaiserwerth on the Rhine (where Miss Nightingale received much of her experience,) and Dresden. France has two, at Paris and Strassburg; Switzerland two; the Netherlands one, at Pittsburg; and Sweden one, at Stockholm." —From the *Armen und Krankenfreund*, May and June, 1854; a journal edited by the Rev. Herr Fliedner, inspector of the Kaiserwerth establishment.

† Speaking of the German hospitals, Dr. Grätzer says (*loc. cit.*:)—"In the hospitals of Dresden, Prague, Berlin, and Vienna, the mortality is 1 in 8; in Breslau 1 in 9; in Dantzic and Hamburg 1 in 12; in Cologne and Königsberg 1 in 13; and, lowest of all, in Munich hospital 1 in 21."

— Dr. Niles, of Lockport, N. Y., suggests that the operation for amputation through the continuity of the metacarpal bones, performed by Dr. A. P. Smith, and republished in the September No. of the MONTHLY, is not new, as has been supposed, but really quite old. By reference to Velpeau's Operative Surgery, it appears that this operation was not unknown to the ancients. After referring to various authorities who have recommended it, he remarks: "I cannot, in fact, understand why the transverse section of the metatarsus, rather than its disarticulation, should not have the preference whenever the disease admits of this operation."

— Prof. B. F. Barker recently performed the Cæsarean operation at Bellevue Hospital, on account of a contracted pelvis, the anterior-posterior diameter of the superior strait being only two inches, the cavity of the sacrum filled with a bony tumor. The child was removed alive, and is now living. It weighed nine pounds. The mother died the fifth day after the operation.

Dr. Gibbs' Second Circular.—The undersigned would respectfully tender his thanks to the Editors of those medical journals who have so kindly noticed his proposed enterprise, in regard to the publication of a *Year-Book of American Contributions to Medical Science and Literature.* He is confident that such a work is needed by the profession, and is demanded by the honor of American medicine. In America, there are no *Abstracts* or *Retrospects* corresponding with those of *Ranking* or *Braithwaite.* These, though valuable productions, are in no manner representatives of American medicine. The gleanings in these are almost entirely confined to journal literature, whereas it is proposed to give in the *Year-Book* a synopsis of all medical matters of importance found in journals, Society transactions, monographs, books, &c., pertaining to medicine having an American origin, and published during the year immediately preceding. As stated in a former circular, to fulfill his design, the undersigned wishes all medical journals, Society transactions, and medical books, of recent issue, sent to his address. A few are yet wanting, to which omission he asks the attention of authors and publishers. What he wishes more particularly to say at present is, that he cannot publish without a greatly *increased subscription list.* To American physicians he appeals in behalf of American medicine, and trusts they will promptly respond to his former circular. Otherwise his enterprise must fail for want of encouragement. Subscribers' names, books, &c., to be directed to

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